WORKIN' WIRELESS Microsoft has formed a joint venture with Ericsson to offer mobile users e-mail access via wireless gear. Page 8.

BIGGER VPNs RedCreek's new Ravlin 7150 supports larger, faster and more easily manageable VPNs. Page 17.

The newsweekly of enterprise network computing

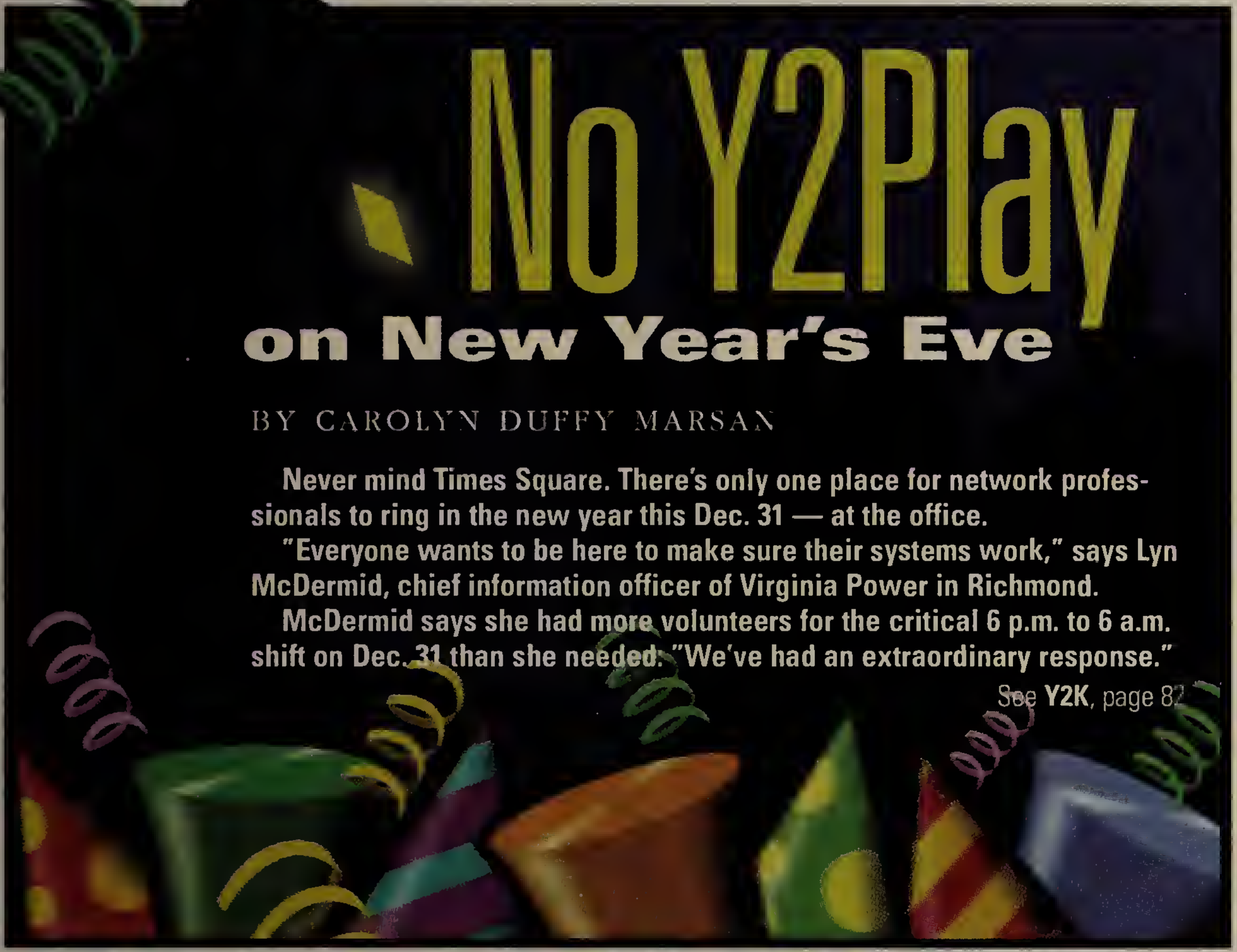
NetworkWorld

December 13, 19 Volume 16, Number 50

The network portal: www.nwfusion.com

Bell tolls for FDDI

Chip makers calling it quits. PAGE 10.



No Y2Play on New Year's Eve

BY CAROLYN DUFFY MARSAN

Never mind Times Square. There's only one place for network professionals to ring in the new year this Dec. 31 — at the office.

"Everyone wants to be here to make sure their systems work," says Lyn McDermid, chief information officer of Virginia Power in Richmond.

McDermid says she had more volunteers for the critical 6 p.m. to 6 a.m. shift on Dec. 31 than she needed: "We've had an extraordinary response."

See **Y2K**, page 82

TOM NORTON

Sun ploy sparks Java grumbling

Standards rift overshadows enterprise Java release.

BY JOHN COX

NEW YORK — Sun's confirmation last week that it has scrapped plans to make Java an international standard has put a damper on the company's coming out party for a new enterprise edition of the technology. And some of Sun's strongest supporters are riled.

In fact, IBM and BEA Systems, key Java boosters, last week said they have yet to sign licensing deals for the new Java 2 Enterprise Edition (J2EE). J2EE adds a vital set of interfaces and services for building server-based applications.

A lack of vendor support for a common version of Java would be bad news for customers, who would have less assurance that a Java program written for one application server would run on another.

While IBM and BEA say they probably will sign on to support J2EE, they still have issues to address with Sun regarding the firm's control over Java.

"We were a bit surprised by Sun's decision," said a deadpan Sandy Rankin, IBM's director of Java software. "The ball is really in Sun's court now; We're interested to hear about what they see are the alternatives to accomplishing this

See **Java**, page 16

Government gives green light to Cisco's buyout of IBM net biz

BY MARC SONGINI

RESEARCH TRIANGLE PARK, N.C. — The process of transforming IBM network customers into Cisco customers can begin in earnest now that the government has given its formal blessing.

The Department of Justice and the Federal Trade Commission have decided they have no objection to Cisco's approximately $600 million buyout of the switching and routing portion of IBM's Networking Hardware Division (NHD). To ease the migration path of NHD customers to Cisco gear, the companies plan to begin interoperability testing between their separate products, sources say.

See **NHD**, page 16

SECRETS *of the* TARIFF GAME

Carriers like to make tariffs as complicated as possible to hide the good deals, but this guide will help you score the best rates.

Page 58.

MEGATELECOM TARIFFS!

DAVID BUTLER

Instant messaging flap renews call for standard

BY CAROLYN DUFFY MARSAN

The on-again, off-again instant messaging wars flared anew last week, as America Online attempted to block traffic from AT&T WorldNet's I M Here service, a gambit that worked only sporadically and quickly garnered criticism.

The flap between the two ISPs could raise the profile of ongoing efforts to standardize

See **Instant**, page 84

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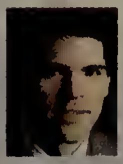
THIS WEEK ONLINE



Keeping Current. Last week, Fred looked at noncomputer technologies that spurred network innovation. This week, he'll take on the top five network technologies that revolutionized the industry. Read his picks and then chime in with your own. **DocFinder: 5937**

Mixed messages. Is unified messaging the cure for message overload? Ipswitch founder Roger Greene says the technology's potential for saving time and money may not live up to its hype. But Lucent General Manager Vinnie Deschamps says to give it a chance. Both execs will be online this week to take your questions about this up-and-coming technology. **DocFinder: 5925**

NOS upgrade. What's better: NetWare 5.X or Windows NT? A user is trying to decide which to install for his departmental server. He is currently running NetWare 3.12, but the rest of his company uses NT. One reader says: "Novell NetWare is by far the more stable network operating system and is much easier to administer than NT." Which would you recommend and why? **DocFinder: 5938**

Forked path. Sometimes the call to management seems almost impossible to resist. But how can you dodge the management path when it seems your only option to get ahead? If you like the hands-on part of your job, is there any way to advance your career without ascending the corporate ladder? Exchange tips with other users in our forum. **DocFinder: 5939**

Independent labor. By 2003, half of the country's work force will be made up of contractors. But how can companies tap into this free-agent market? In this week's Water Cooler, Features Managing Editor Amy Schurr shares what she learned at the IT Sourcing and Staffing Conference and offers tips for finding all those independent workers. **DocFinder: 5940**

NetworkWorld

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FACE-OFF

Is unified messaging the cure for message overload? Vinnie Deschamps of Lucent says yes, while Roger Greene of Ipswitch begs to differ. Page 57.

REVIEW:

Our testing shows a level playing field for 11 user-to-site VPNs. Page 61.

NEWS BRIEFS, DECEMBER 13, 1999

VA Linux wows Wall St.

VA Linux Systems' share value rose almost 700% following its initial public offering last Thursday, setting a record for a first-day percentage gain on Wall Street. VA Linux, which started the day with an offer price of $30, saw its shares rise to a high of $320 before closing at $239.25 on a volume of 7.68 million shares. VA Linux distributes and services the open source Linux operating system, an alternative to Microsoft's Windows operating system that has been touted by some as a strong, low-cost platform for Web servers.

BroadVision broadens vision

Last week, e-commerce software provider BroadVision made its first acquisition by snapping up Fidutec Information Technology. Financial details of the transaction were not disclosed.

Based in Lausanne, Switzerland, Fidutec is a system integrator staffed by English-, German-, French- and Italian-speaking consultants who specialize in Internet banking. BroadVision said it has been working with Fidutec for the last 18 months, so consultants are already trained to use the BroadVision software.

Gateway founder bows out

PC and server vendor Gateway, Inc. last week announced that Jeff Weitzen will replace company's colorful founder Ted Waitt as CEO. Weitzen will continue to hold the position of company president, running Gateway's global operations, the vendor said. Waitt will retain his title as Gateway chairman and play an active role in shaping the company's strategy. The transition is effective Jan. 1.

Ted Waitt (above) is out as Gateway's CEO.

NT 4.0 passes security muster

Though a year later than expected, Microsoft can finally boast that its Windows NT 4.0 operating system and CryptoAPIs for encryption have passed government security evaluations by the National Security Agency (NSA) and the National Institute of Standards and Technology (NIST). Under the exacting review — in which Microsoft took the unprecedented step of letting the NSA look at its NT source code — Microsoft had to make software changes to pass what's called the NSA C2-level tests for secure access control. These culminated in NT Service Pack 6-A, but one change came as recently as last week when Microsoft issued a C2 "hot fix" for access control, even as it announced it had finally gotten C2 evaluation.

The NIST, which oversees testing of encryption modules, found that Microsoft's CryptoAPIs in the Windows 95, 98, NT 4.0 and 2000 operating systems meet the basic Level 1 requirements of the FIPS 140-1 standard. In other words, the encryption services work without known flaws.

Nice day at the optical beach

There hasn't been much opportunity to get to know a company called Qtera, and if a rumored $2.5 billion to $3.5 billion deal goes through, that time is running out. Nortel Networks is reported to be sniffing around the year-old Boca Raton start-up, ready to seal a stock deal to capture Qtera's optical expertise.

Qtera, funded with $43 million in venture capital, projects that by the end of next year it will be ready to ship technology that enables all-optical transport gear that can cut the equipment cost for long-haul fiber networks by 90%. The deal would not only enrich Nortel's fiber-optic acumen with Qtera's brain trust, but it would capture a fistful of patents Qtera holds on the technology. Nortel isn't talking about the reported deal.

CERT taking on new role

Carnegie Mellon University, home to the computer emergency response organization called the CERT Coordination Center — which issues technical advisories on Internet security problems — now plans to tackle research on defensive measures. Carnegie Mellon's Software Engineering Institute will house the adjunct CERT Analysis Center to research security incidents in order to better understand the root cause of security vulnerabilities and ways to counter them.

Virus author pleads guilty

Computer programmer David Smith last week plead guilty in a New Jersey court to having created and spread the notorious Melissa virus, which is believed to have caused more than $80 million in damage over the Internet. The virus, which struck in March, attacked Microsoft Word programs and spread itself via infected e-mail attachments. Under a plea bargain agreement, Smith is expected to serve up to five years in prison.

Management vendors target e-businesses

BY JEFF CARUSO

Companies that need better visibility into the networks and applications supporting their new Internet businesses don't necessarily need to look to start-ups targeting this market. That's because established management software companies are retooling their products to work in the new e-world.

Among recent activity:

- Peregrine Systems last week introduced Get. Resources, software for tracking assets that a company buys over the Internet. Peregrine also announced an alliance with business-to-business company Commerce One. The partnership is aimed at allowing users to purchase directly from Commerce One's Web site.
- Candle this week will reveal it is restructuring its enterprise business group to bring together its traditional management tools with new software for e-business. Candle hired Steve Kiser, former CEO of Xerox subsidiary Chrystal Software, to help blend the two disciplines.
- Compuware this month will start shipping enhancements to its EcoTools software to make it more relevant to an e-commerce environment. The software will be able to tell which Web pages get the highest number of hits, as well as measure transaction response times for servers.
- Concord CEO Jack Blaeser recently said his firm will expand beyond its traditional network performance reporting software to report on the performance of e-business transactions. Concord will likely acquire other management companies next year to achieve this, he says.

The efforts by these established firms to get the extra letter "e" into everything they do just might work, according to observers.

E-business capabilities added to existing management software can be more palatable to users than brand-new software from untested companies, says David Yockelson, a vice president at the META Group consultancy. Companies would like to tie e-business management into their existing network and systems management processes, he says.

Peregrine's new software allows businesses to purchase supplies and equipment online. Get. Resources is intended to give users a way to compare different online resellers' prices and to track if shipments have been on time. The product links to Peregrine's AssetCenter asset management software, which tracks equipment throughout its useful life.

The software runs on Windows NT, is accessed via a browser, and uses Oracle, Microsoft or Sybase databases. Get. Resources is expected to ship in February. A typical installation will cost $200,000.

At Candle, "all products here have to be e-aware," says Kiser, the new vice president and group manager of Candle's enterprise computing group.

He says Candle will build a Web-based portal to manage all the types of systems the firm currently supports, plus newer e-business systems such as Web servers. Candle's existing management tools will be tied in with the portal, he says.

Compuware also is integrating its management tools as it moves into e-business. Compuware's enhancements come at a time when the company is trying to tie its EcoTools monitoring software into its EcoScope performance management tool and the capacity-planning software Compuware recently acquired from CACI International.

The new version of EcoTools will ship this month. The software starts at $700 per server.

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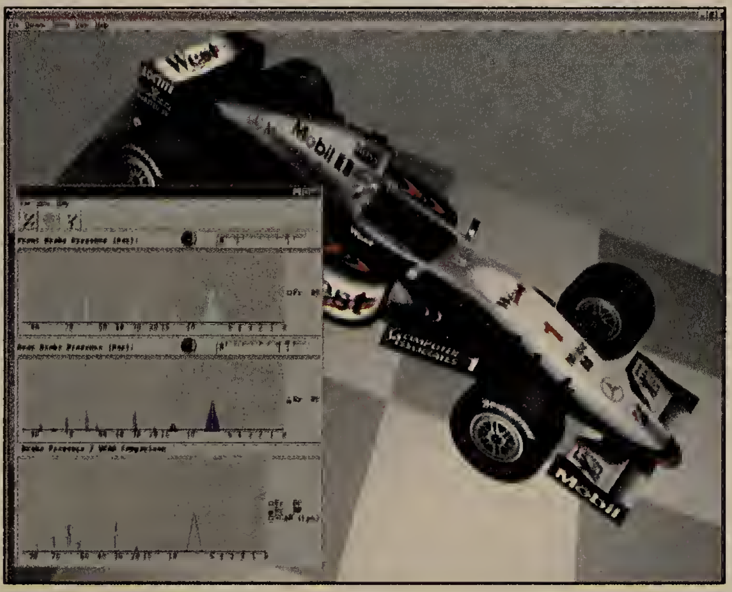

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Microsoft makes wireless bid

Ericsson deal, new microbrowser help company make up ground.

BY JOHN FONTANA

Despite another high-profile partnership and the introduction of a new microbrowser, Microsoft is still trying desperately to get its feet on the ground in the wireless market.

Last week, the software giant and the Swedish telephone firm Ericsson agreed to form a joint company that will allow mobile users to access e-mail with wireless phones.

The deal is similar to one Microsoft made a year ago with Qualcomm to form Wireless Knowledge, which offers data services to wireless carriers.

Microsoft also introduced a new microbrowser for wireless phones called Mobile Explorer, which provides a software platform for application services.

But despite the two advancements, Microsoft is late again and playing its usual game of catch-up.

"The wireless industry has been doing a tango, and Microsoft has been doing a waltz — they are out of step," says Ian Gillott, an analyst with International Data Corp. in Framingham, Mass. "If it was any other company, I would say you are too late, but Microsoft might be able to pull it out."

A little more than a year ago, Microsoft laid out its wireless strategy, which was intended to support the firm's move into the post-PC era. The company's four goals were to embrace industry standards; provide server, middleware and client products; support value-added service; and help carriers deploy infrastructure.

The company's first misstep may have been to snub the Wireless Application Protocol (WAP) in favor of IP. WAP is a specification for providing wireless phones and other devices with efficient access to e-mail and other Internet content (see story, right). The protocol enjoys widespread acceptance, but Microsoft only recently pledged support.

The deal with Ericsson is significant in that Microsoft gains the right to use Ericsson's WAP stack in Mobile Explorer. Ericsson is one of the creators of the standard.

"We've learned that Microsoft and WAP have the same goal," says Rebecca Thompson, a Microsoft product manager. "WAP is committed to XML and Internet standards, and both are key for us."

What about Windows CE?

Another Microsoft goal is to provide a wireless client platform. While Mobile Explorer does that, it also masks another Microsoft misstep.

"With Mobile Explorer, Microsoft in a sense is going around the failures of Windows CE," says Warren Wilson, an analyst with Summit Strategies in Kirkland, Wash. "They now have this technology they can use to play in the market while they try to tune CE."

Windows CE has been criticized for being too bulky for deployment on wireless phones. A competing operating system from Psion, called Epoc, is already highly regarded and has the backing of Ericsson through a project called Symbian.

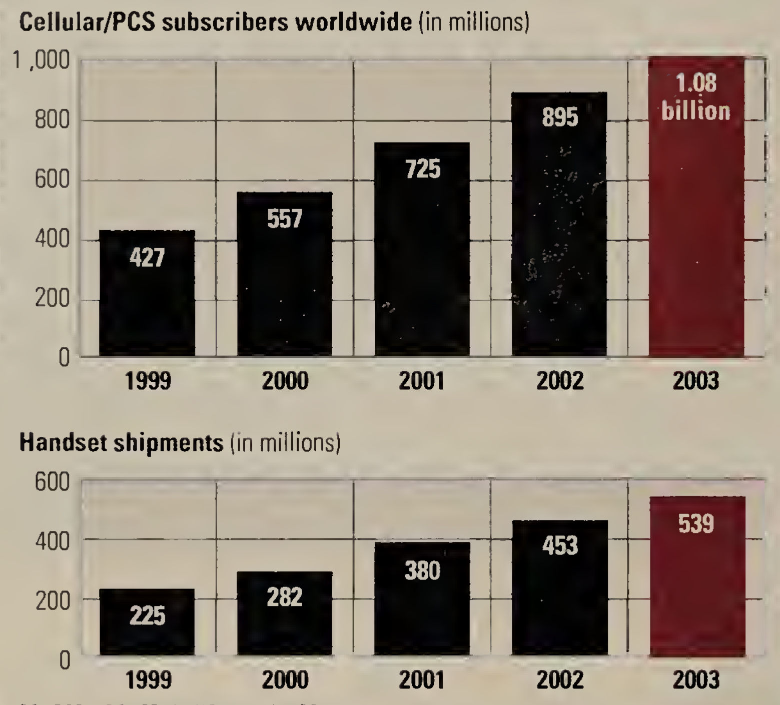
Mobile Explorer also is likely to have its problems entering the microbrowser arena. Nokia, Phone.com and Spyglass all have browsers, while Mobile Explorer will not be available until late next year.

"Microsoft is nowhere near solidly established in this market," Wilson says. "But Mobile Explorer and investments like the one with Ericsson are another step in the right direction."

With wireless key to Microsoft's overall strategy and with the market taking off at a furious pace (see graphic), Microsoft is likely to begin taking those steps a little quicker. ◪

Wireless boom

The number of handset devices, cell phones and smart phones shipped per year and the number of people using them are expected to explode in the next five years.



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For the answer to this week's question and more net trivia, visit Network World Fusion and enter 2467 in the DocFinder box.
This week's question:
Who is Richard Posner?

The Scoop

The news behind the news

WHAT IN THE WIRELESS WORLD IS WAP?

It's nearly the oldest promise in the history of cellular phones — the ability to access data over a wireless connection.

For nearly 10 years the promise has been greeted by snickers and outright laughter, but now it finally appears to be garnering some credibility.

Credit the Wireless Application Protocol (WAP), an open protocol that allows for the efficient transmission of Web-based data and applications over a wireless connection.

WAP is slim and hip; Internet standards are fat and slow.

WAP is not a replacement for Internet standards. It is actually based on many of the standards currently running on the Web. It's just that WAP handles them in a more efficient way.

Internet standards such as HTTP and TCP are not designed for long latencies, intermittent coverage and the limited bandwidth of wireless networks. HTTP sends commands in bulky text format, and security standards require heavy client/server communication that makes them nerve-wracking and nearly useless over wireless links.

WAP's got the goods

WAP has the answers, according to nearly all major carriers, handset vendors and software developers in the wireless market.

WAP uses binary transmission for greater compression of data, and is optimized for long latency and low bandwidth. It uses Wireless Markup Language, a derivative of XML, for WAP content, which makes optimum use of small screens, including support for two-line text displays or full graphic screens.

By 2001, every wireless phone will be WAP-enabled, according to market research firm International Data Corp. in Framingham, Mass. With that kind of ubiquity, much like the browser has enjoyed on the Web, users will be able to run applications on their cell phones that could provide great efficiencies.

IT professionals could check the health of their servers while stuck in traffic on the morning commute. Sales personnel could check on a customer's latest orders minutes before stepping into their offices.

Another plus for WAP is that it works over a variety of wireless transport mechanisms and can work in conjunction with Bluetooth, another up-and-coming wireless specification.

Unlimited potential?

The protocol appears to have unlimited potential, with the WAP Forum already working on end-to-end security, smart card interfaces, connection-oriented transport protocols, persistent storage, billing interfaces and push technology.

With the client side enjoying unprecedented popularity, the back end is beginning to be filled in. Nokia this week will release one of the first WAP servers, which will be able to satisfy appetites for WAP-enabled applications (see related story, page 18).

So it looks like it's good-bye snickers, hello reality.

— *John Fontana*

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FDDI nears the end of the line

Chip makers announce "last call" for silicon; vendors urge users to migrate.

BY JIM DUFFY

FDDI users who have delayed migration to newer, faster technologies had best get moving because FDDI's days are now officially numbered.

Chip manufacturers have announced a "last call" for FDDI silicon, which means network vendors are developing their last FDDI products. Once the current supply of FDDI chips and network devices runs out, there will be no more.

"The last time we accepted orders was July," says Mike Shoemake, product manager for Motorola's PowerQuick line of communications processors. "Our last ship date is January 2000."

Once the darling of high-speed LAN users, the 100M bit/sec fiber-optic gear has been supplanted by faster technologies, such as Gigabit Ethernet and ATM, and less-expensive ones, such as Fast Ethernet. The last surge in FDDI purchases was in 1995 and 1996, when ATM was in its LAN infancy and Gigabit Ethernet was merely a glimmer in some engineer's eye.

The market for FDDI has been sharply declining since 1996 (see graphic).

Some users are already well into their migrations. Texas Christian University (TCU) in Fort Worth, Texas, once had 30 hosts and about 4,000 endstations on an FDDI network; that's now down to two hosts and a half-dozen endstations, says Bill Senter, manager of technical services at the university.

TCU converted most of its FDDI nodes to Gigabit Ethernet last summer. The school will complete its transition in the next month, Senter says.

"We actually decided to go before we heard [the last call]," Senter says. "It was like, 'Wow, good thing we were moving.' We really have liked FDDI and almost had a sentimental attachment to it because it's been so reliable and the redundancy's been great."

The Home Shopping Network in St. Petersburg, Fla., still has an FDDI ring at the heart of its network, but plans to replace that with Gigabit Ethernet early next year, says Roderick White, HSN's vice president of telecommunications.

"Since we intend to make the switch in February — our slowest month — this [last call] announcement will not change our timeline," White says. "Most of the time, being lucky is better than being good. In this case, we lucked out."

Vendors have been encouraging FDDI customers to migrate to alternative technologies for a few years, but now the encouragement has been replaced by prodding and nudging.

"FDDI has been a very stable technology for customers and has served them well for quite a long time," says Tim Hale, senior product marketing manager at 3Com. "With this news from the silicon vendors, now is the time to seriously look at your FDDI migration solution rather than waiting until you can't get FDDI anymore."

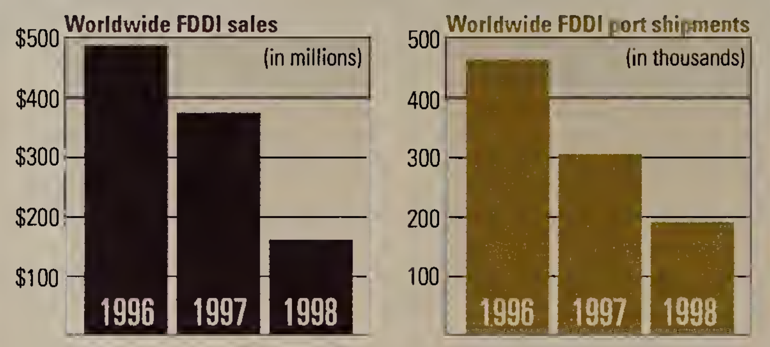
3Com offers up to a 20% rebate toward the purchase of qualified 3Com products on the trade-in of comparable, competitive networking products. 3Com also offers a rebate of 50% off the list price of its CoreBuilder 9000 switch when customers trade in earlier-generation 3Com switches.

For those who want to squeeze through the last few bits, vendors are stockpiling FDDI products to last a few years.

"Especially in the high-end router series, we recognize that FDDI is going to be around for quite a while. So we decided to go ahead and invest pretty heavily in doing a very large last-time buy to take care of any of our demand requirements far into the future," says Tom Russell, manager of product marketing for high-end routing at Cisco. ◪

FDDI's light goes dim

Sales and shipments of FDDI equipment have dropped by more than 60% since 1996.



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Brief description of project: ____________________

Cost of project: ____________________

Financial return to date/expected return: ____________________

In what ways does this project represent innovative use of e-commerce? ____________________

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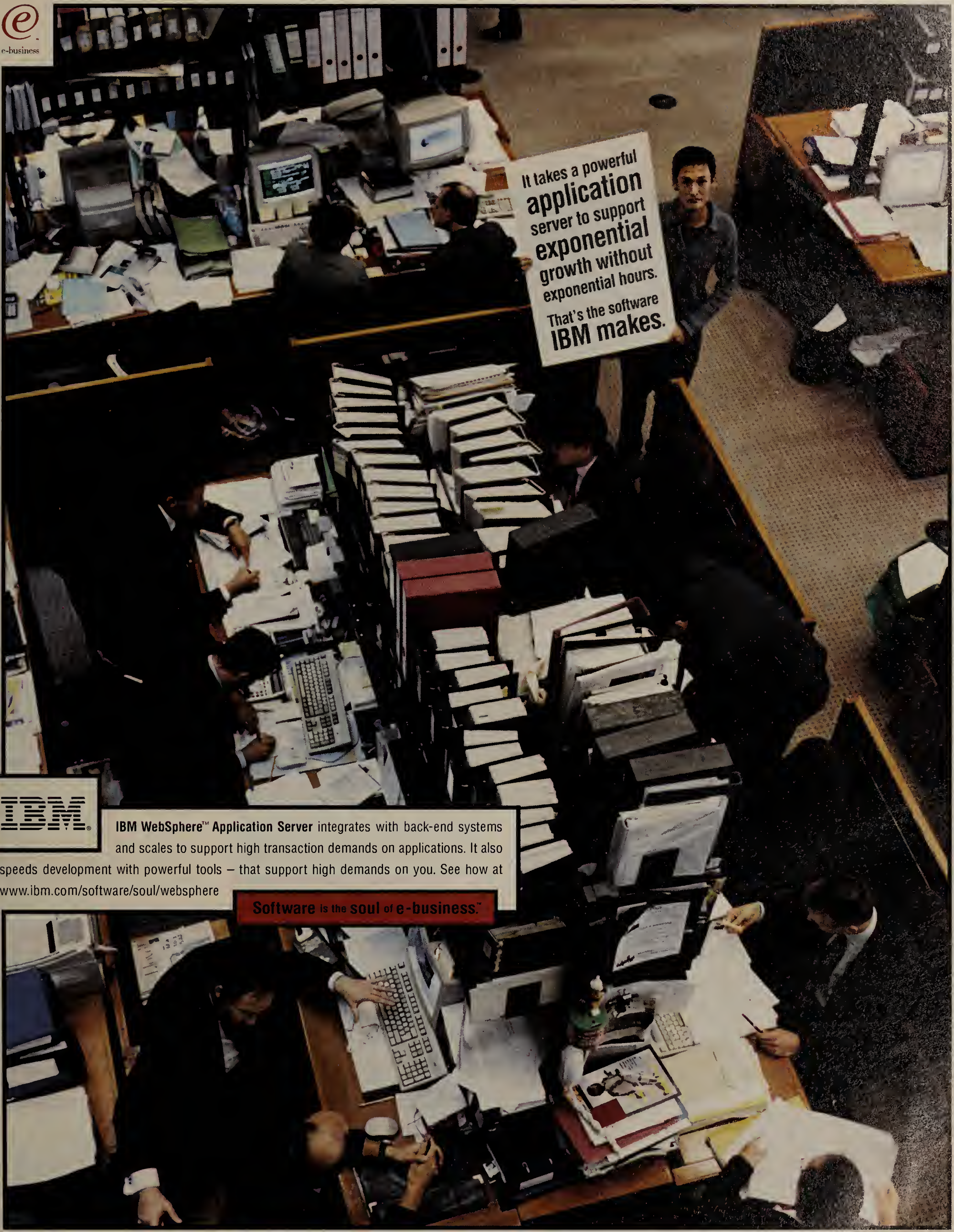

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Standard pitched for linking e-comm apps, directories

BY JOHN FONTANA

A proposed standard that could help unite corporate directories and e-commerce applications is being greeted with cautious optimism by users and analysts.

Bowstreet last week led a group submitting the Directory Services Markup Language 1.0 (DSML) to three standards clearinghouses, including the Organization for the Advancement of Structured Information Standards (OASIS), an international group that focuses on data exchange formats. IBM, Microsoft and three other companies joined with Bowstreet

Observers say moving DSML through the standards process is the right way to go, but warn they will take a wait-and-see approach to the technology, since it is based on XML, an increasingly popular but largely unproven technology.

"DSML has the potential to help solve the problem of interoperable and interchangeable directories, and I will take a good, hard look at it," says one directory manager for a Canadian financial firm who asked to remain anonymous. "But I need to separate the reality from the hype; that's what worries me about XML."

Directories all have proprietary schema, a way to define the objects and attributes they house. With DSML, directories would be able to describe the information they contain in a standard way. Any XML-based application could use DSML to read schema, such as information about end-user access rights that could be important for companies deploying extranet and business-to-business commerce applications.

DSML would reduce the need for developers to build directory-specific interfaces into their applications.

"If you are writing an XML-aware application, that means you will be able to consume directory information, and that is a good thing," says Jamie Lewis, president of The Burton Group, a consultancy in Midvale, Utah. But Lewis cautions that XML may be getting overhyped and that DSML won't magically resolve directory interoperability issues.

Caution appears to be prudent, since DSML has yet to be accepted by a standards body. The specification was submitted last week to OASIS, but the sides are still discussing the submission of a request for a working group charter, according to Laura Walker, executive director of OASIS.

Bowstreet, in hopes of garnering broad support, also submitted the specification to the World Wide Web Consortium, which controls the base XML standard, and BizTalk, a Microsoft-led initiative to develop XML formats.

Bowstreet officials expect it will be up to a year before DSML becomes a recognized standard, but the firm already has included the specification in its Web Automation Factory, a platform for creating, managing and linking customized Web sites for business-to-business commerce. IBM, Microsoft, Novell, Oracle and Sun/Netscape have all said they will include DSML in their directories. ◪

Directories
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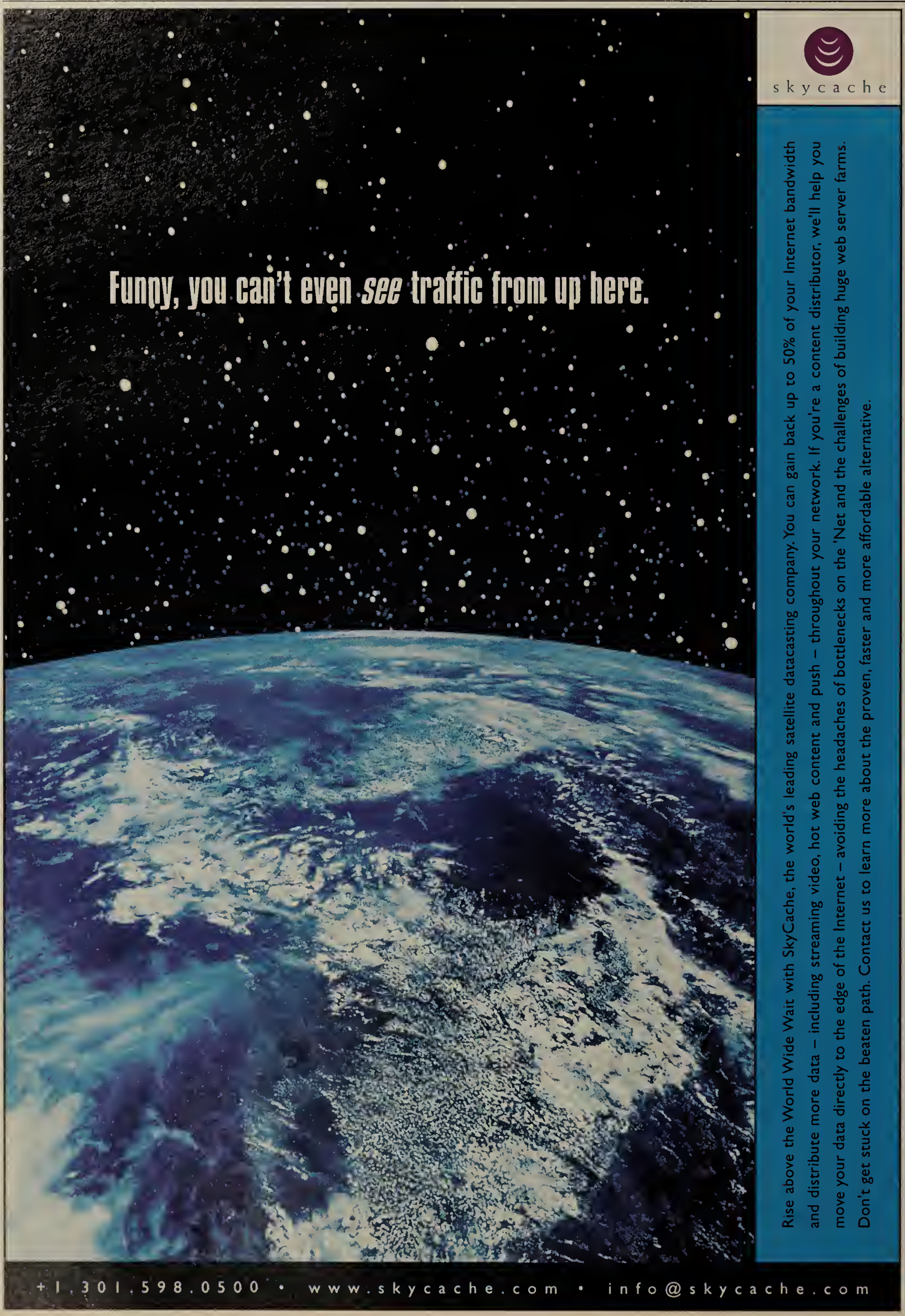

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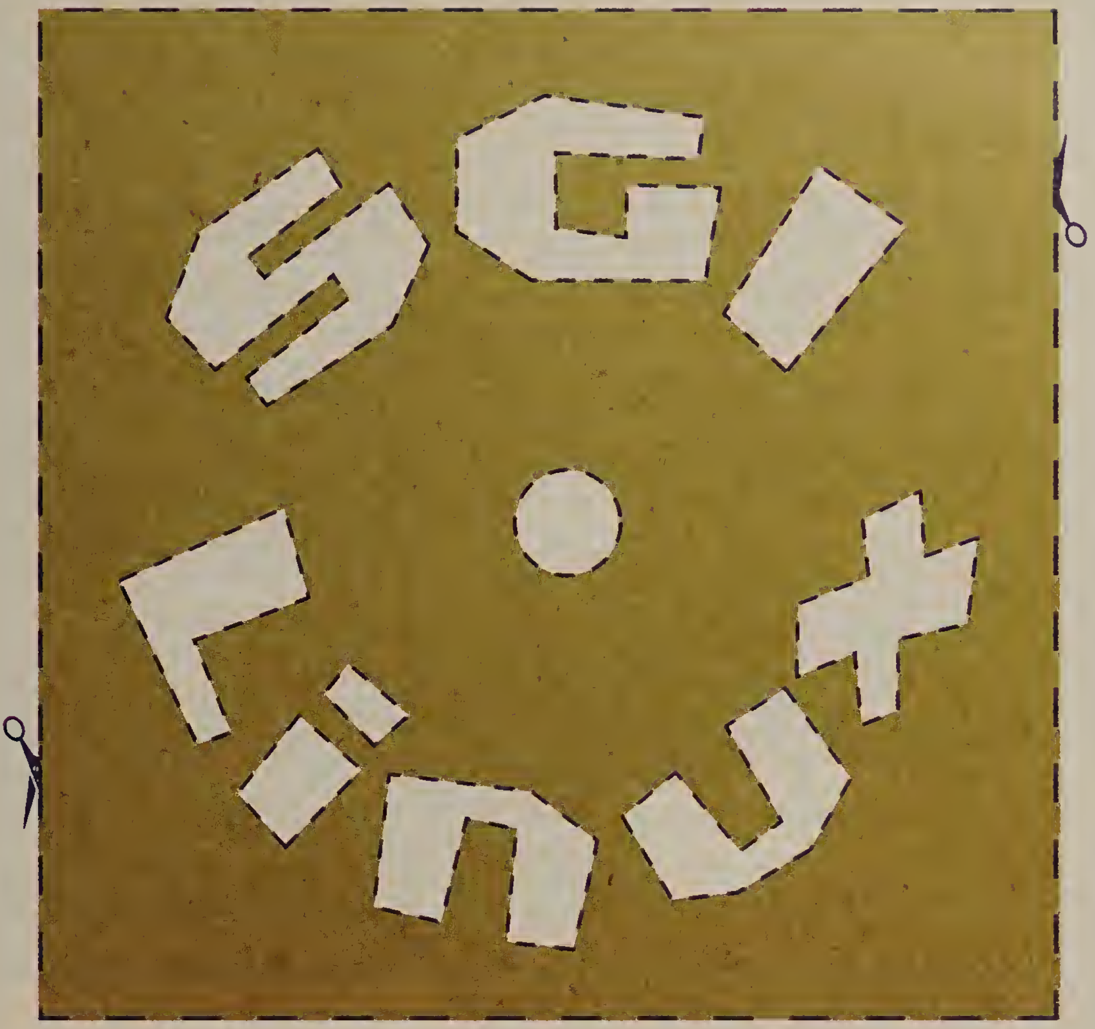

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Start-up carriers make converged services pitches

BY TIM GREENE

Two upstart carriers will use free or cut-rate 'Net access as a carrot to lure small and midsize businesses to sign up for new services that carry voice and data traffic over a single link.

In separate efforts, 2nd Century Communications and Urban Media are rolling out bundled services, with 2nd Century letting customers burst above their dedicated Internet access speed for free, and Urban offering 200K bit/sec Internet access at no charge.

Receiving voice and data services over a single trunk line can save customers money by eliminating the need to pay for separate access lines. It can also be more convenient than dealing with both a local phone company and an ISP.

The bundled offerings, among the first designed for small and midsize companies, feature local phone service prices that depend on the going rates in different markets. Long-distance is also included in the services.

2nd Century feeds customer sites via traditional T-1 circuits. It installs Vina Technologies integrated access devices at customers' sites. These devices have analog voice ports to handle phone connections and 10/100M bit/sec Ethernet ports to the sites' LANs.

Both voice and data are sent back via ATM to 2nd Century's switching office. Switches from AFC and Convergent dump voice traffic onto the public phone network, and Internet traffic is sent to an ISP.

While the network embraces cutting-edge technologies, it also relies on relatively untested equipment companies, notes Tim Smith, an analyst with DataQuest. "That's a risk they take as they go to market," Smith says.

2nd Century will sell to any customer in its service areas, which initially includes Atlanta; Austin, Texas; Baltimore; Boston; Houston; Jacksonville, Fla.; Orlando; Miami; Philadelphia; Pittsburgh and Tampa, Fla.

The Global Companies has upgraded its voice and data networks by switching to 2nd Century and is saving money to boot. For example, Global has gone from 28 to 38 phone lines at its St. Petersburg, Fla., site and pays $250 per month less than it did before, says Don Holcomb, Global's vice president of operations.

As for Urban, the carrier runs fiber from the basement of buildings to each tenant floor and multiplexes voice and data onto T-3 trunks back to its switching offices.

Urban sells only to businesses located in office buildings owned by a network of associated property-management companies. The carrier is rolling out services in Chicago, Dallas, Detroit, Houston, Jacksonville, Los Angeles, Minneapolis, Philadelphia, and the San Francisco Bay and Washington, D.C., areas.

Urban isn't saving customer Fort Point Partners any money over its alternatives, but Fort Point Vice President of Operations Mark Corrales says the carrier gets services installed faster and is more responsive to calls for help than other providers.

Both 2nd Century and Urban plan additional services, including application outsourcing, network management, virtual private networks and wireless LANs.

2nd Century: www.2ndcentury.com; Urban: www.urbanmedia.com

Upstarts try beating the Bells

2nd Century Communications and Urban Media are trying to lure small and midsize businesses with packaged voice and data services.

	Internet access	Local voice	Long-distance
2nd Century	$500 (128K bit/sec, burstable to 1.2M bit/sec)	On par with local Bell	About 9 cents per minute
Urban Media	Free (200K bit/sec, may be slower due to stat muxing)	On par with local Bell	4 to 7 cents per minute

More breaking news

Network World Fusion now has more news than ever. Check out these stories online:

Novell uncorks support packs for NetWare 4, 5

Novell this week will make available a beta version of its latest support packs for NetWare 4, 5 and GroupWise. Support packs are intended to fix bugs in NetWare, and this package, for instance, is designed to correct 1,200 to 1,500 errors. **DocFinder: 5941**

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Kennard: Fixed wireless could rival DSL, cable

Broadband fixed-wireless systems are a potential widespread competitor to DSL and cable modems, says the nation's top telecom regulator. And the creation of large telecom companies through mergers could help bring about such a three-way race for control of broadband networking. That was the view Federal Communications Commission Chairman William Kennard expressed in a keynote to last week's annual gathering of the nation's top telecom lawyers. **DocFinder: 5942**

Bush takes to the Web

Campaign 2000 took a high-tech turn as Texas Gov. George W. Bush used videoconferencing software to speak with New Hampshire fourth-graders last week. Using White Pine's CU-SeeMe Pro videoconferencing client, Bush was able to see the students and hear their questions from the three remote sites. **DocFinder: 5943**

Network World Fusion

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CA to bring smart agents to e-comm apps

Company gives new details on predictive Neugent technology.

BY ELLEN MESSMER

ISLANDIA, N.Y. — Computer Associates last week shed new light on its plans to deliver predictive reasoning technology that should make it easier for companies to manage networks and online business transactions.

CA has been talking about its Neugent software agents for at least a year and a half, but only last week started to get down to specifics. The company says it will deliver Neugents for its line of e-commerce and security applications as well as for a host of third-party products. CA has Neugents in the works for everything from Unix to Microsoft Exchange to 3Com Palm handheld devices to routers.

The first Neugent shipped by CA monitors Windows NT systems. The company also offers a tool kit that lets customers roll their own Neugents designed to work with CA's Unicenter: The Next Generation management platform.

Neugents, based on neural network technology, learn from experience so they can spot potential problems with applications, networks or devices and notify end users or network managers.

CA plans to highlight its first slew of Neugents next spring at the company's annual customer conference in New Orleans. However, CA declined to detail when its Neugents will ship.

Among the Neugents that could be on display are those that will come as options with CA's assorted financial and supply-chain products, which are sold through the company's recently formed InterBiz e-commerce division. The Neugents for e-commerce applications from CA acquisitions such as MK Group, Prestige Software, Acacia Technologies and Portico, will help companies better diagnose buying patterns, delinquent accounts and inventory levels.

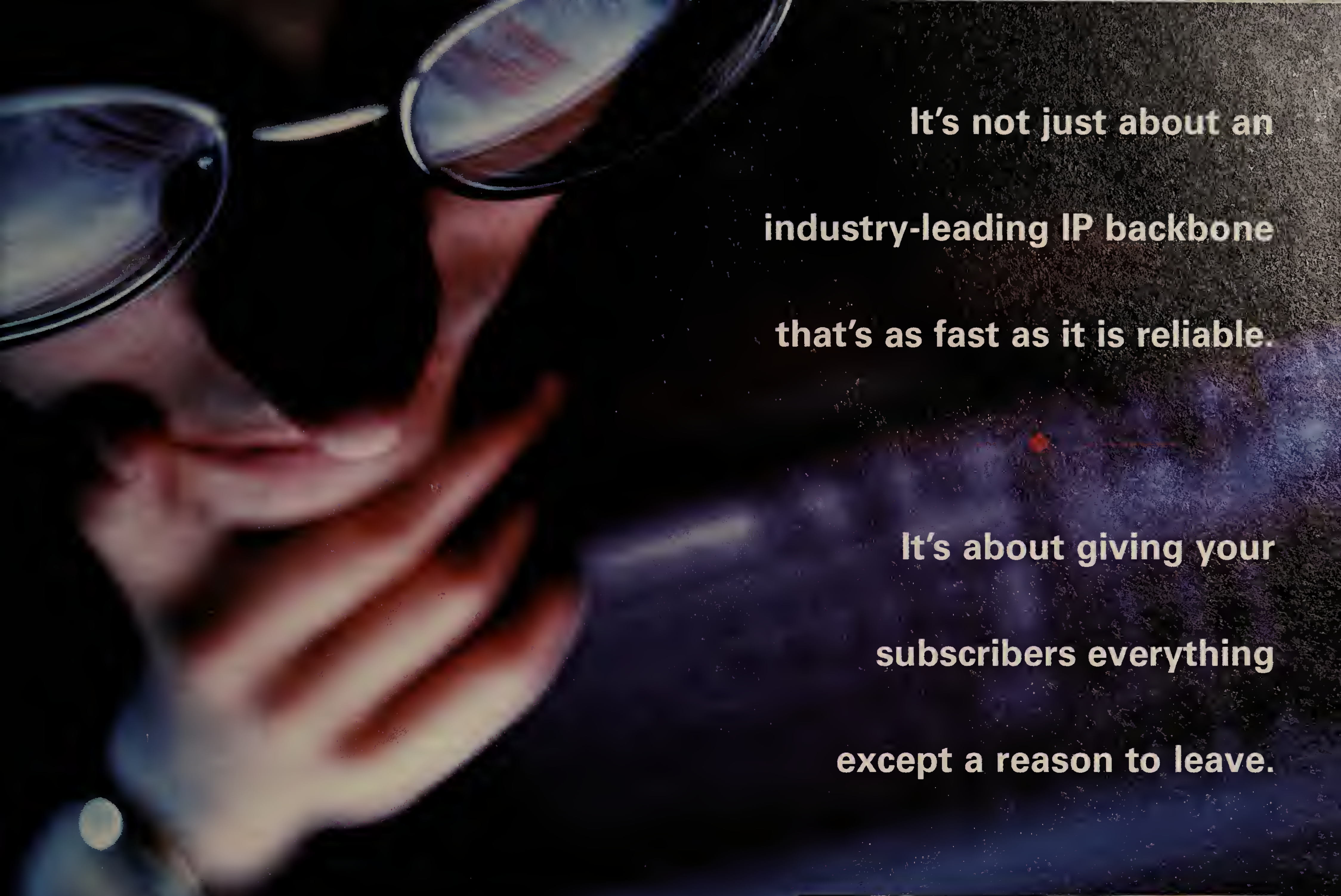
Some longtime CA customers are intrigued.

"This could give us a better ability to forecast sales," says Dawne Luetscher, director of IS at Arrow Group Industries in Wayne, N.J., which uses CA's MK Group supply-chain application for issuing reports and managing transactions and inventory. Arrow Group sells storage buildings to customers such as Sears and Home Depot.

If a Neugent module can scour public information such as U.S. economic reports or Moody's bond ratings with Arrow Group's sales and customer lists, it might aid in predicting sales, Leutscher says.

CA last week also announced it is building its artificial-intelligence technology, which can provide predictions in a 3-D visual form — into the company's Jasmine ii application development environment.

The Jasmine ii tool kit, now in beta testing, lets developers build a server-based repository to store data objects mapped from applications and databases built on object-oriented programming technologies, including Java and C++. ◪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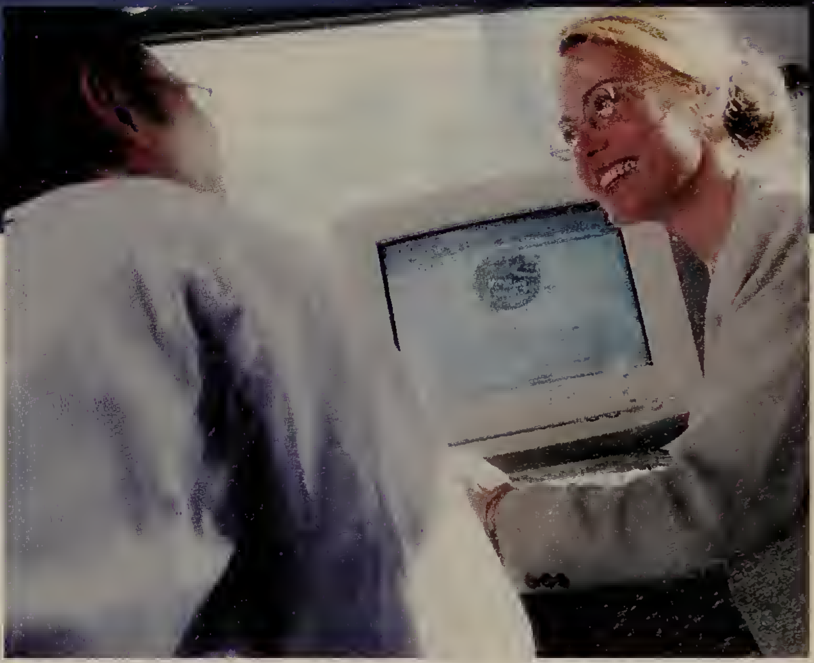

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Java,
continued from page 1

goal of a Java standard."

Ironically, it was IBM refugee Pat Sueltz, the recently appointed president of Sun's software and platforms group, who broke the news last week about Sun's decision during the Java Business Conference '99 in New York.

"We will remain the [Java] guardians," Sueltz said, noting that the European Computer Manufacturers' Association (ECMA) — the group Sun has been working with since May to standardize Java — hadn't done anything wrong. Sun's decision had more to do with the company's commitment to control compatibility among various Java-based products and to speed Java development, she said.

Sun's Pat Sueltz has ruled out plans to work with standards body ECMA.

However, observers say Sun's relationship with the ECMA became strained because of the group's policy of not maintaining a vendor's copyright and Sun's insistence on not giving up its Java copyright.

The Java standard decision wasn't the only move by Sun last week that rankled the Java faithful. The company had to apologize to a group of open source developers known as Blackdown after neglecting to give the group credit for a port of Java on Linux that Sun initially billed in a press release as a joint effort between it and Inprise.

Now, the good news

But Sun, like the jazz band that played cool and smooth tunes at the company's Java party last week, hit a few high notes of its own at the conference. Among these was the company's decision to do away with certain royalties it had been extracting from Java developers.

And even Sun's decision on yanking Java out of the ECMA's hands wasn't considered bad news by all Sun partners.

"Long-term, we think it would be beneficial to the industry to turn Java over to a standards body," said John Magee, Oracle's director of Internet platform marketing. "But we're comfortable with the decision on ECMA because the process [created by Sun for developing the Java specification] has been working very well."

The system he refers to is the Java Community Process, under which anyone can propose a change to the Java specification. A Sun "program office" reviews proposals and invites members of the Java development community to work on turning approved proposals into drafts that are then used by Sun engineers to build new Java code.

The ECMA decision got mixed reviews from users. Without copyright protection, Sun would be unable to go to court to prevent other companies from creating incompatible Java Virtual Machines or other software, said independent Java consultant Rajeev Karunakaran, of San Francisco.

"If making Java a standard means it becomes easier for Microsoft to create a divergent form of Java, then I think Sun's decision was right," he says.

Sun has achieved its write-once, run-anywhere goal for Java, Karunakaran says, and he wants to see that accomplishment protected.

But he also wants a Java standard — sooner rather than later. And he wants a standard that isn't tied to the fortunes of a given vendor.

Given that so many companies have so much riding on Java, the brouhaha over Sun's standards decision promises to continue.

"We want a model in place to maintain the pace of J2EE innovation," says Scott Dietzen, chief technology officer of BEA's e-commerce server group. BEA has hammered out an agreement in principle with Sun on these concerns, according to Dietzen.

That's not the case with IBM, which is wrangling with Sun over the latter's insistence of creating a label, or brand, called "J2EE compatible." IBM's Rankin says compatibility testing is vital and IBM fully supports it, but the branding would confuse enterprise customers by seeming to create a different Java, she says.

"It's not adding any value to our customers," Rankin says.

The challenge Sun faces now is managing a growing federation of vendors and developers fully committed to using Java to compete with each other. This is a political world more than a technical one. Sueltz, a veteran of years of IBM politics, may be ideally suited for this new world.

One of her first key moves was a reorganization that put George Paolini, former vice president of marketing, in charge of a new group focused on serving the needs of the vendor partners and developers. Paolini described his role as that of an ombudsman — an impartial intermediary between the community members and Sun. ◪

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The Upshot

Sun's decision to pull Java out of the international standards process has upset some key Java backers and could affect the way Java applications work across enterprise networks. Critics of Sun's decision say the lack of a standard leaves more room for varied — and incompatible — implementations of Java in enterprise applications.

NHD,
continued from page 1

It is also likely that Cisco will tweak its management software to handle IBM devices.

There appears to be little apprehension among customers about moving from IBM to Cisco, although one manager expressed concern about narrowing market options.

"The problem I have is Cisco is coming too close to being a monopoly," says an IT director at a large enterprise network, who spoke on the condition of anonymity. "We always want to have two vendors, and in this area, we don't. Cisco is the networking company." The manager says that while Cisco is usually very responsive to customer requests, he fears that could change and "there would be no alternative" vendor.

Most users expressed greater confidence, however. With its vast market share, Cisco is a natural choice for users to go to for their network gear, says Ron Thielen, an IT planner at the University of Chicago and president of the SHARE user group, which includes IBM and Cisco customers. Thielen says migrating to Cisco equipment is not a concern for most SHARE members. In fact, SHARE intends to add more Cisco teaching sessions to assist the IBM users in their migration efforts.

"Cisco approaches IBM in terms of responsive service and support," says Donald Haile, an IS manager at Fidelity Investments in Boston. "They have a mature service organization, and they know how to get things done."

Haile believes NHD customers should be reassured by the fact that Cisco is populated by a number of ex-IBMers, including company CEO John Chambers.

STEVE BORNS

"Cisco approaches IBM in terms of responsive service and support. They have a mature service organization, and they know how to get things done."

Donald Haile, IS manager, Fidelity Investments

Fidelity's massive network includes thousands of Sun servers and several mainframes attached to Cisco routers via Channel Interface Processors. Fidelity has been migrating from SNA to IP for the past five years and except for the mainframe-to-mainframe communications, is mostly an IP shop. Fidelity still has 15 NHD 3745 Communications Controllers to run SNA sessions and they work very well; nevertheless the company will probably shed them in the next couple of years, Haile says.

One network manager at a large insurance company who asked not to be named is more upbeat today than he was when the Cisco-IBM deal was first announced. His company network was primarily Cisco-based but had about 300 users who relied on 15 IBM 2216 routers. Now his company intends to phase out the IBM gear and run the entire network on Cisco equipment, making it easier to manage. "Cisco has treated us well," he adds.

"We chose Cisco as our vendor about four years ago," says Laurence Kung, a senior network manager at MCI WorldCom. "This validates the path we chose, now that the industry is taking the same one."

MCI WorldCom is completing an SNA-to-IP migration and still has some IBM gear in its network, Kung says, but is primarily a Cisco shop. While the migration was positive overall, there were difficulties doing things such as getting IBM monitoring software to extract data from the Cisco devices, he says. With IBM and Cisco now partners instead of direct competitors, users may even find it easier to conduct their SNA-to-IP migrations, he suggests. ◪

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Briefs

Allied Telesyn International last week announced a line of low-density Gigabit Ethernet switches for high-bandwidth Layer 2 switching in data-intensive workgroup and desktop environments. The AT-GS900 series delivers gigabit switching at a street price of less than $315 per port, Allied Telesyn says. The AT-GS903 features three fixed 1000SX gigabit ports and a single 10/100TX port. The AT-GS904 sports four fixed 1000SX ports that provide an aggregate throughput of more than 5.9 million packet/sec, the company says.

The AT-GS903 and the AT-GS904 are available now, at list prices of $1,690 and $1,840, respectively.

Allied Telesyn: www.alliedtelesyn.com

Storage vendor Seagate Technology last week announced a finalized agreement to buy **Xiotech** and its storage-area network product Magnitude. The stock-swap deal to acquire the privately held Xiotech is valued at about $360 million, Seagate says.

Seagate www.seagate.com; Xiotech: www.xiotech.com

Inrange Technologies this week will announce a Fibre Channel switch for storage-area networks (SAN). The 128-port FC/9000 is designed for enterprise data center-based SANs and includes support for full switched-fabric and Fibre Channel Arbitrated Loop environments. The switch has redundant control modules, power supplies, fans and hot-swappable components, which increase its fault tolerance.

The FC/9000 will be available in the second quarter of 2000. Pricing is not yet available.

Inrange: www.inrange.com

RedCreek aims to build bigger VPNs

Faster hardware and new software support more users, easier management.

BY TIM GREENE

NEWARK, CALIF. — RedCreek Communications is bringing out virtual private network hardware and software to help users build larger VPNs that are easier to manage.

Among the company's new offerings being announced this week are a high-speed VPN tunnel server, a management platform that network managers can use to set policies for users, and a new operating system with hooks for routing and firewall applications.

The new tunnel server, the Ravlin 7150, supports a full T-3 worth of traffic. The device sends and receives encrypted data over a 45M bit/sec link to the Internet, establishing secure links with other Ravlin tunnel servers or individual RedCreek clients.

The Ravlin 7150 has enough processing power to handle as many as 200 simultaneous site-to-site connections to other tunnel servers at separate nodes of a VPN. The box can also handle about 1,000 simultaneous connections with individual dial-up clients.

RedCreek's Ravlin 7150 tunnel server supports 1,000 connections at T-3 speed.

The device supports IP Security authentication and Data Encryption Standard 3, and is interoperable with Remote Authentication Dial-In User Service servers. It features a 10/100M bit/sec Ethernet port to connect to the LAN.

RedCreek says the new box is a big improvement over its former high-capacity server, the Ravlin 7100, which also had a T-3 interface.

"It's identical to the 7100, but it's twice as fast and handles twice as many users for $1,000 more," says Jim Perry, RedCreek's director of channel marketing.

The new Ravlin 7150 costs $8,500.

The T-3 box is key to enterprises that have passed the initial trial phase of VPN use and are ready to authorize hundreds or thousands of users with access to the VPN, says Raymond Keneipp, principal analyst with The Burton Group. "You need a really big pipe and powerful encrypting," he says.

The operating system for all Ravlin boxes, including the 7150, has been upgraded to include a packet transform engine, which is software that manipulates packets. For example, the engine would enable the Ravlin to filter packets in conjunction with a firewall. The

See **RedCreek**, page 24

Data replication helps prevent potential problems

BY DENI CONNOR

The anticipation of day-long power outages and disruptive earthquakes that could cause downtime and lost transactions was on Tom Halen's mind when he decided he needed to replicate data from his financial network in San Francisco to a remote office in San Diego.

Halen, general manager at Golden Gate Financial Group, is using data replication software from Network Integrity. Dubbed Real-time Replicator, the software lets customers continuously copy data from one site to another in real time as changes are made. In the event of a failure, up-to-the minute data can be retrieved from the remote site.

Numerous vendors, including IBM, EMC, Compaq and Veritas, have adopted data replication technology for Windows NT and Unix platforms from the mainframe, where data replication is common.

Robert Gray, an analyst at International Data Corp. in Framingham, Mass., says data replication software is prevalent in the banking industry, where its use is mandated. "It gives you a means of making data available 24-7 forever," Gray says. "More and more high-availability, high-end storage will be organized in configurations that have that disaster tolerant/disaster recovery capability."

Golden Gate Financial Group, which makes about $1 billion in trades per month, replicates 6.6G bytes of data over T-1 lines as changes are made from its head office in San Francisco to a remote office in San Jose in real time.

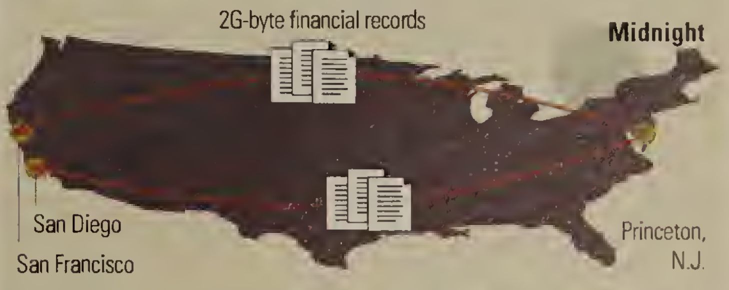
The company recouped its investment in Network Integrity's Real-time Replicator quickly last year when San Francisco was hit by a day-long power

See **Data**, page 24

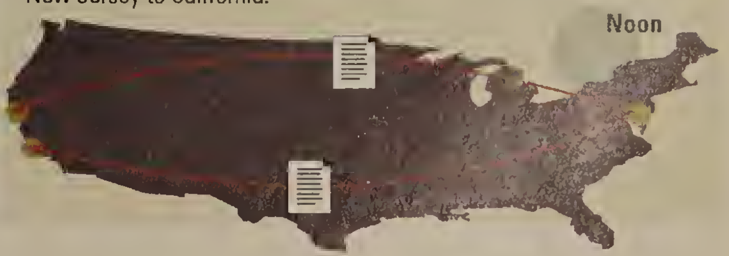
Cross-country replication

Merrill Lynch uses Real-time Replicator on its NT server network so its branch offices always have quick access to fresh data.

Every midnight on the East Coast, 2G bytes of financial data are sent from NT servers in New Jersey to the California offices. This lets employees use the most recent data locally, without the 2- to 3-minute transmission delay.



At noon each day, updates that were made to the data are sent from New Jersey to California.



Nokia package offers wireless IP for the masses

BY MARC SONGINI

Users looking to have their handheld devices securely tied to a wireless IP backbone may want to check out the latest offerings from Nokia.

The big mobile phone company is rolling out a set of products that will let users with cellular phones, personal digital assistants or other mobile devices easily access IP network resources. The company has also partnered with IBM and Hewlett-Packard to bundle the Nokia wireless software server on their NT boxes.

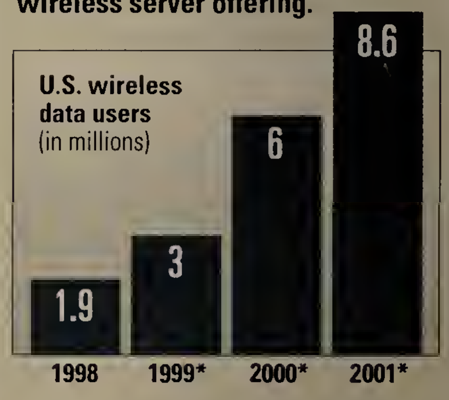
Nokia is backing wireless IP, claiming 10% to 15% of all handheld devices sold in 2000 will be Internet-ready.

This week, Nokia plans to offer its WAP Server 1.0 to customers. The software lets any Wireless Application Protocol handheld device, such as a Palm or a cellular phone, handle a variety of tasks, such as e-mail retrieval or order entry.

WAP Server sits on a Windows NT box and converts IP traffic to the Wireless Markup Language, an XML-based format that lets applications talk to mobile devices. The server authenticates end users via certificates. Developers can use the server to connect wireless devices to Internet applications based on Windows CE, Java, XML and other technologies, Nokia says.

Networking the wireless way

Nokia hopes to cash in on the expected boom in the number of U.S. wireless data users with its new wireless server offering.



SOURCE: CAHNERS IN-STAT GROUP, NEWTON, MASS.

*Projected

The company claims it already has 10,000 WAP Server installations, 1,000 of which are in the U.S. To further bolster its market position, Nokia also recently announced the Nokia 71xx line of WAP-compliant phones, which will be available in the U.S. in the first half of 2000.

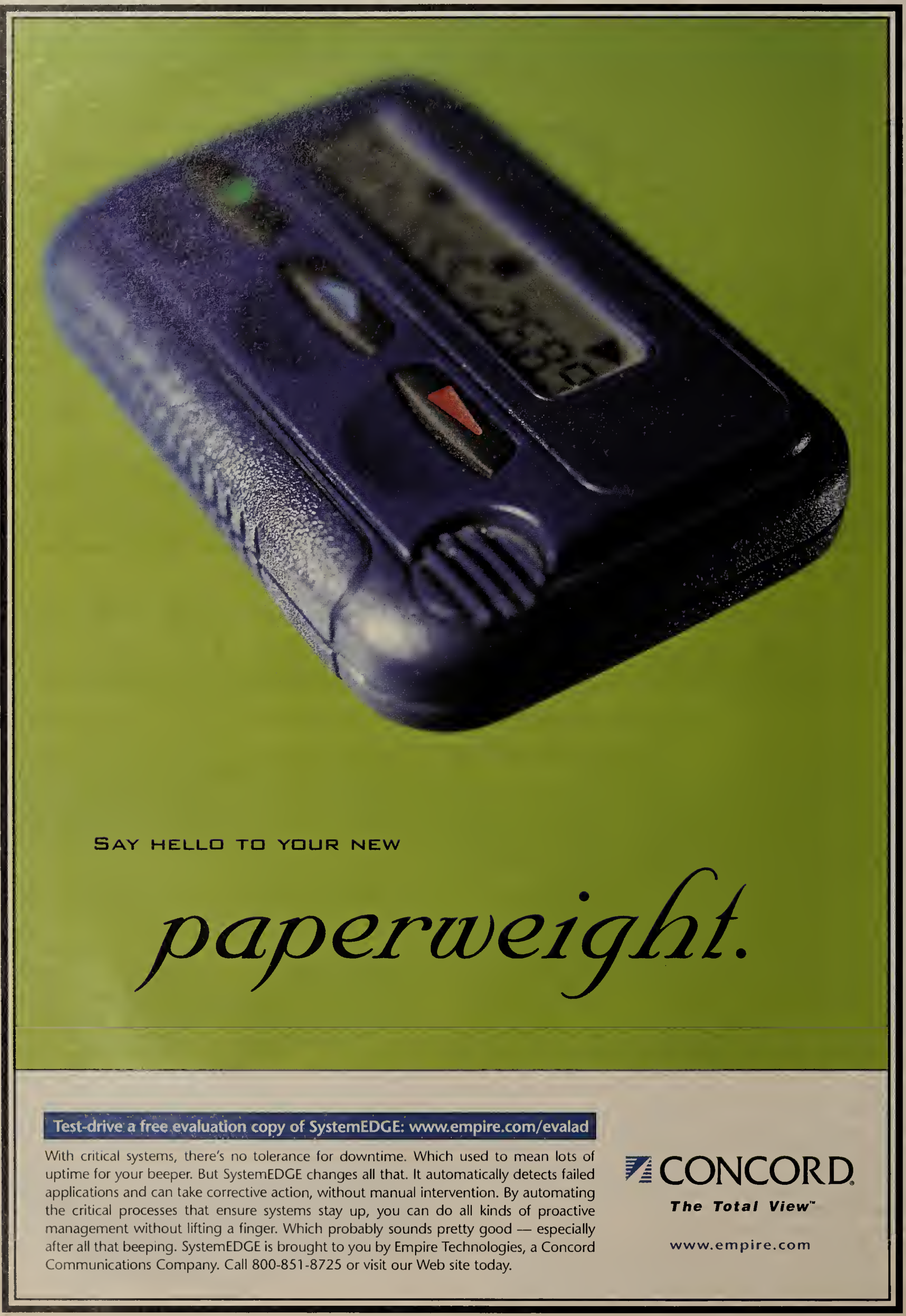
IBM will not only bundle Nokia WAP Server software on its NetFinity servers, but it also will offer it as an add-on to Nokia's middleware.

Wireless IP is a method to get data and applications out in real time to users so they don't have to boot up their laptops, says Peter Stevens, a vice president at Sabre in Dallas. Sabre offers computer flight-reservation services and has been testing the WAP Server on NT for cell phone users to book flights or access travel data on the fly.

WAP Server 1.0 can exploit existing IP data and programs — in can be used with off-the-shelf products without "the pain and suffering of a special device design," Stevens says.

Pricing for WAP Server 1.0 starts at $10,000.

Nokia: www.nokia.com



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10G Ethernet coming to a network near you

BY JIM DUFFY

The time for enterprises to start planning for 10G bit/sec Ethernet is now, according to one of the world's leading Ethernet and telecommunications companies.

The technology won't initially be used to build high-speed campus and building backbones, though, but as a service offering from carriers for metropolitan-area networks (MAN) or as a fat pipe to access the Internet, Nortel Networks says.

Even though a draft specification of the 10G bit/sec Ethernet standard is not expected until September 2000, Nortel is making a "strategic investment" in the technology now, according to Rod Wilson, director of the company's 10G Ethernet Project, and Carlos Zaidi, Nortel's Emerging Technologies strategist. Nortel says the time is right because users and service providers need a familiar, low-cost, high-speed technology to support networked applications, such as virtual private networks, IP telephony, transparent LAN services and e-commerce.

Ethernet running at 10G bit/sec offers that. It reduces costs because it's one technology that can be used from the LAN to the MAN to the WAN. There's no need for ancillary equipment, such as protocol translators, so equipment and operational costs are reduced.

Why the market for 10G bit/sec Ethernet will boom

By 2002...

- Close to 300,000 10G bit/sec WAN ports will be required in North America alone.
- Global dense wave division multiplexing optical infrastructure will support between 400,000 and 1.6 million 10G bit/sec ports.
- More than 200,000 server-area networks will need 10G bit/sec links.

SOURCE: NORTEL, ANALYST REPORTS

Indeed, Ethernet gear costs one-fifth the price of its SONET counterparts for the WAN — OC-192 ATM and packet-over-SONET. This could translate into less-expensive services and easier network management for enterprises, because the network is based on a single core technology.

SONET is an optical networking technology that is complex, costly and optimized for voice. But with the multibillion-dollar installed base of SONET gear in the public network, the technology probably won't be disappearing anytime soon.

Ten-gigabit Ethernet packets, therefore, would include a thin SONET wrapper that would strip out most of the costly and complicated attributes, but maintain some of the unique WAN management capabilities for data transport, Nortel officials say.

Nortel plans to add 10G Ethernet interfaces to its Versalar 25000 router in late 2000, company officials say. Nortel also plans to develop a 10G Ethernet server interface for server clusters. The company already supports 10G bit/sec interfaces on its Optera optical transport system.

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* Netcraft Survey (September 1999).

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Data,
continued from page 17

outage. Because data in the San Francisco office was replicated to San Jose, trading was only down a half-hour. Employees traveled to the San Jose, set up shop and used current replicated data to do their work.

"It was a matter of copying the replicated data to a working directory and accessing it," Halen says. "By the time we got to the San Jose office, we were already set up."

After the lights came back on, Golden Gate copied the data back to San Francisco and started work again.

"We are trading a few hundred million dollars on any given day, and with the market's volatility, we need to execute our orders and trades at any time," Halen says. Before Golden Gate installed the software, it copied data manually to from city to city.

At Merrill Lynch, which is also using Network Integrity software, 2G bytes of critical financial information has to be distributed daily to three remote offices for use by staff. Previously, IS staff copied the data by batch file scripts manually from Princeton, N.J., to remote offices in San Francisco and San Diego once per week. Now data is updated two times each day to NT servers in each remote location — once at midnight and again at noon. Only changed data amounting to about 200M bytes is sent, thus saving bandwidth and time.

Now users have access to the latest data and it's local, residing on a file server where they work, says Richard Ens, NT systems manager. Merrill Lynch paid off its data replication costs in a month. ◪

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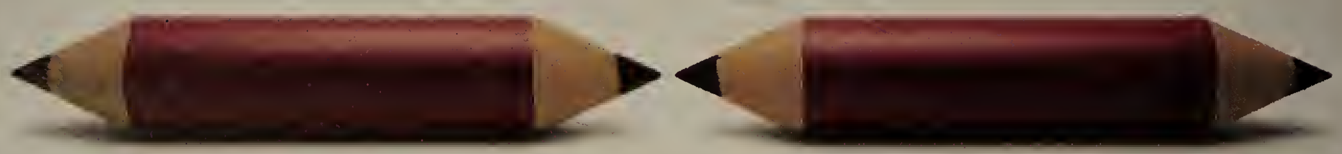

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RedCreek,
continued from page 17

previous operating system did not have that capability. The packet transform engine can be added to previous Ravlin models via a firmware download.

To manage the Ravlin 7150 as well as other RedCreek gear, the company is introducing RedCreek Enterprise Manager, software that imposes policy rules across enterprise VPNs.

From a central workstation, network administrators can provision remote RedCreek devices, configure them and download software updates. Administrators can also group VPN users and impose access policies on them. Enterprise Manager sets the policies, and they are downloaded to Ravlin devices at each node in the VPN in which the policies are enforced.

RedCreek has formed partnerships with IBM Global Services and Expert Systems Resources (ESR) to provide customers with maintenance and other services.

IBM will supply users worldwide with configuration, integration and maintenance services.

ESR will provide project management for customers thinking about setting up VPNs, including security audits.

RedCreek: www.redcreek.com

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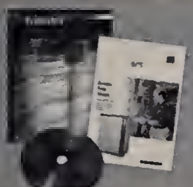

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Internetworking Monitor . Kevin Tolly

THE IMPLOSION OF TOKEN RING

With the near simultaneous implosions of IBM's Networking Hardware Division (NHD) and Olicom at the end of August, any remaining hope that token ring would continue as a strategic network technology was snuffed out.

Victim of a deadly downward spiral of lessening customer interest followed by correspondingly drop in vendor interest, token ring has "augered in." Olicom, whose stock was trading at 11/16 the last time I checked, cited dramatic decline in token-ring sales as the cause for the company's accelerated demise.

Ironically, there are still many customers out there who've got networks that can continue to run fine for years to come. But, like it or not, they will have to begin the forced march to Ethernet.

Just a year ago, things looked very different. The religious wars were over and Ethernet was victorious, but token ring was clearly a viable niche market. While greenfield sites would likely be Ethernet, it was still usually cheaper to buy the more expensive token-ring network interface cards (NIC) and switch ports to update and extend existing token-ring LANs than to begin a massive migration to Ethernet.

When it came to advancing token ring to the 100M bit/sec level, the field had narrowed to three: IBM, Madge and Olicom. But to many existing token-ring customers, the IBM/Madge/Olicom troika represented more than enough commitment. Many customers were anxiously awaiting High-Speed Token Ring (HSTR) NICs and switch ports that were slated to ship around year-end 1998.

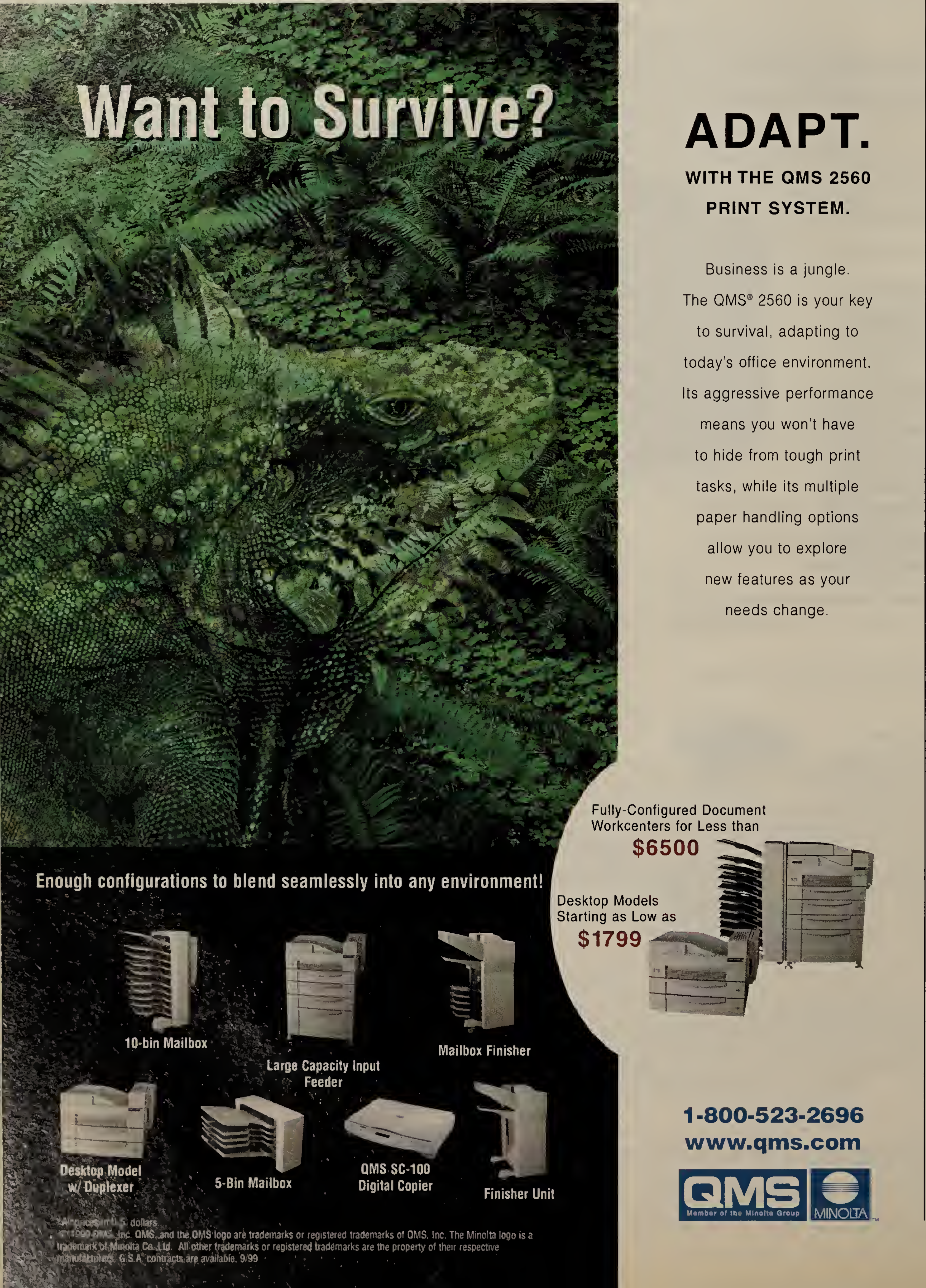
More than that, though, before committing to 100M bit/sec token ring, customers were waiting for IBM et al to announce an aggressive campaign to make up for lost time and produce industry-standard Gigabit token ring in 1999. Clearly, they wanted that message as a guarantee that money invested in HSTR would not simply be good money after bad. What was the answer to the Gigabit question?

As my German friends would say, "Keine Antwort is auch eine Antwort." Rough translation: No answer is also an answer. IBM's failure to take a positive, aggressive stance no doubt sent a clear, negative message to many of its larger customers. If IBM isn't bullish on token ring, they likely told themselves, it is time to put our Ethernet conversion into high gear.

Last December, IBM quietly cancelled its announced HSTR switch port module — leaving only Olicom and Madge to deliver on the promise of HSTR switching. While both companies had churned out impressive technology over the years, by themselves, they could not sustain an industry.

Today, Olicom is gone — having sold all its token-ring technology to Madge, and IBM NHD is just a bit player. That leaves Madge the undisputed "premier" purveyor of token ring in the world. And what is Madge doing? Trying to become an application service provider as fast as it can. Convert? No longer is it a question of "if," but merely of "when."

Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, NJ. He can be reached at (723) 528-3300 or ktolly@tolly.com.



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☐ 8. ☐ Consultant (Independent)
☐ 9. ☐ Other (please specify) ______________

3. What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of?
(Please print the appropriate number code on the line next to each product category. Please complete ALL categories A–N.)

1. $100 Million or more
2. $50 Million to $99.9 Million
3. $25 Million to $49.9 Million
4. $10 Million to $24.9 Million
5. $1 Million to $9.9 Million
6. $100,000 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A ____ Large Systems *(Mainframes/Minis)*
B ____ Desktops *(Micros/Laptops/Workstations/PDAs)*
C ____ Servers
D ____ LANs
E ____ WAN Equipment
F ____ Carrier Services
G ____ Internetworking
H ____ Internet
I ____ Intranet
J ____ Extranet/Ecommerce
K ____ Remote Access
L ____ Peripherals *(including storage)*
M ____ Software
N ____ Service/Support

4. What is the total number of sites for which you have purchase influence?
(check ONE only)

1. ☐ 100+ 2. ☐ 50 – 99 3. ☐ 20 – 49 4. ☐ 10 – 19 5. ☐ 2 – 9 6. ☐ 1 7. ☐ None

5. What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization?
(check ONE box in each column)

SERVERS At Location A		SERVERS Entire Org. B	CLIENTS At Location C		CLIENTS Entire Org. D	LANS At Location E		LANS Entire Org. F
☐	1. 50,000+	☐	☐	1. 50,000+	☐	☐	1. 50,000+	☐
☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐
☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐
☐	4. 100 to 999	☐	☐	4. 100 to 999	☐	☐	4. 100 to 999	☐
☐	5. 50 to 99	☐	☐	5. 50 to 99	☐	☐	5. 50 to 99	☐
☐	6. 10 to 49	☐	☐	6. 10 to 49	☐	☐	6. 10 to 49	☐
☐	7. 1 to 9	☐	☐	7. 1 to 9	☐	☐	7. 1 to 9	☐
☐	8. none	☐	☐	8. none	☐	☐	8. none	☐

6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check ONE only)

CORPORATE:
1. ☐ Entire Enterprise/Multiple Enterprises
2. ☐ Division/Multiple Divisions
3. ☐ Department
4. ☐ None

B. Involvement (check ALL that apply)

1. ☐ Create Network/IT Strategy
2. ☐ Recommend/Specify Brand
3. ☐ Approve Purchase
4. ☐ Evaluate Products/Services
5. ☐ Determine the Need
6. ☐ None

7. What is the estimated number of employees at your location/in entire organization?
(check ONE in each section)

A. At your location:

1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 250 – 499
8. ☐ 100 – 249
9. ☐ 99 or less

B. Entire organization:

1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 499 or less

8. Please indicate the Internet/Intranet/LAN/WAN products/services that you are currently involved in purchasing or plan to purchase (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

INTERNET/INTRANET

A B
☐ 01. ☐ VPN Equipment
☐ 02. ☐ VPN Services
☐ 03. ☐ Firewalls/Security/Encryption
☐ 04. ☐ Electronic Commerce
☐ 05. ☐ Web Servers/Software
☐ 06. ☐ Web Enabled Call Center Tools
☐ 07. ☐ Voice/Video Over IP (IP Multicast Routing)
☐ 08. ☐ Internet Services
☐ 09. ☐ Web Hosting
☐ 10. ☐ Host Access
☐ 11. ☐ Web Development Tools
☐ 12. ☐ Management/Monitoring Software
☐ 13. ☐ Web Based Management Tools
☐ 14. ☐ Web Based Collaboration/Groupware
☐ 15. ☐ Caching/Load Balancing Products
☐ 16. ☐ Other Internet/Intranet

LOCAL-AREA NETWORKS/INTERNETWORKING

A B
☐ 17. ☐ Local-Area Networks
☐ 18. ☐ Network Operating System Software (NOS)
☐ 19. ☐ Intel Based Servers
☐ 20. ☐ Intel Based Multiprocessor Servers
☐ 21. ☐ RISC Based Servers
☐ 22. ☐ Clustered Servers
☐ 23. ☐ Print Servers
☐ 24. ☐ Routers
☐ 25. ☐ Layer 2 Switches
☐ 26. ☐ Layer 3 Switches
☐ 27. ☐ Layer 4 Switches
☐ 28. ☐ ATM Switches
☐ 29. ☐ Token-Ring Switches
☐ 30. ☐ Network Storage (NAS, SANs)
☐ 31. ☐ Storage/Backup (Optical, Disk, Tape, RAID)
☐ 32. ☐ Network Test/Diagnostic Tools
☐ 33. ☐ UPS
☐ 34. ☐ Network Interface Cards (NICs,PCMCIA)
☐ 35. ☐ Hubs/Intelligent Hubs/Stackable Hubs
☐ 36. ☐ Cables,Connectors, Baluns
☐ 37. ☐ SNMP Platform
☐ 38. ☐ Management Frameworks
☐ 39. ☐ Other LAN/Internetworking

WAN EQUIPMENT & SERVICES

A B
☐ 40. ☐ Modems
☐ 41. ☐ Cable Modems
☐ 42. ☐ Asynchronous Transfer Mode (ATM)
☐ 43. ☐ Frame Relay Equipment Including FRADS
☐ 44. ☐ Frame Relay Services
☐ 45. ☐ Remote Access Products
☐ 46. ☐ Remote Access Services
☐ 47. ☐ Wireless Data Equipment/Services
☐ 48. ☐ ISDN Equipment/Services
☐ 49. ☐ FT-1/T-1/T-3 Services
☐ 50. ☐ xDSL Services/Products
☐ 51. ☐ Diagnostic/Test Equipment
☐ 52. ☐ DSU/CSU
☐ 53. ☐ PBXs
☐ 54. ☐ Videoconferencing
☐ 55. ☐ Managed LAN/Router Services
☐ 56. ☐ Fax Servers/Services
☐ 57. ☐ Other WAN Equipment/Services

None of the above (1 - 57) A ☐ 58. B ☐

9. Please indicate the Network hardware/software/services that you are currently involved in purchasing or plan to purchase: (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

COMPUTERS/PERIPHERALS

A B
☐ 01. ☐ Laptops/Notebooks/PDAs
☐ 02. ☐ PCs
☐ 03. ☐ Windows Terminals/Thin Clients
☐ 04. ☐ Workstations
☐ 05. ☐ Storage/Backup (Optical,Disk,Tape,RAID)
☐ 06. ☐ Printers
☐ 07. ☐ Printer/Fax/Copier Hybrids (Multifunction Printers)
☐ 08. ☐ Minis
☐ 09. ☐ Mainframes
☐ 10. ☐ Fax/Modem Boards
☐ 11. ☐ Memory/Chips/Boards/Cards
☐ 12. ☐ Other Computers/Peripherals

SOFTWARE/APPLICATIONS

A B
☐ 13. ☐ Network Management
☐ 14. ☐ Systems Management
☐ 15. ☐ Security
☐ 16. ☐ Directory Services
☐ 17. ☐ Operating Systems
☐ 18. ☐ Applications Development Tools
☐ 19. ☐ Database Management/RDBMS
☐ 20. ☐ Groupware
☐ 21. ☐ E-Mail
☐ 22. ☐ Enterprise Resource Planning (ERP)
☐ 23. ☐ EDI
☐ 24. ☐ Desktop Videoconferencing
☐ 25. ☐ Imaging
☐ 26. ☐ Middleware/Serverware
☐ 27. ☐ Document Management
☐ 28. ☐ Site Metering Tools
☐ 29. ☐ Data Warehousing
☐ 30. ☐ Anti Virus Software
☐ 31. ☐ Multimedia
☐ 32. ☐ Y2K Conversion Software
☐ 33. ☐ Helpdesk
☐ 34. ☐ Other Software/Applications

SERVICES

A B
☐ 35. ☐ BPO (Business Process Outsourcing incl. Financial Services, HR, Logistics etc.)
☐ 36. ☐ Applications Outsourcing
☐ 37. ☐ Call Center Outsourcing
☐ 38. ☐ Systems Integration/Consulting
☐ 39. ☐ Education/Training Services
☐ 40. ☐ Other Services

None of the above (1 - 40) A ☐ 41. B ☐

10. Please indicate the platforms that are currently installed/planned: (check ALL that apply)

A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS

A B
☐ 01. ☐ TCP/IP
☐ 02. ☐ IPv6
☐ 03. ☐ SNA
☐ 04. ☐ Novell IPX/SPX
☐ 05. ☐ APPC/APPN/LU 6.2
☐ 06. ☐ NETBIOS/NETBUEI
☐ 07. ☐ NFS
☐ 08. ☐ SNMP
☐ 09. ☐ Other Network Protocols

LAN/WAN ENVIRONMENT

A B
☐ 10. ☐ Gigabit Ethernet
☐ 11. ☐ Switched Ethernet
☐ 12. ☐ Fast Ethernet
☐ 13. ☐ Ethernet
☐ 14. ☐ ATM
☐ 15. ☐ Token Ring/Token Ring Switching
☐ 16. ☐ IP Switching
☐ 17. ☐ Layer 3,4 Switching
☐ 18. ☐ FDDI
☐ 19. ☐ 100Base-T
☐ 20. ☐ 10Base-T
☐ 21. ☐ Fibre Channel
☐ 22. ☐ Wireless
☐ 23. ☐ DSL
☐ 24. ☐ ISDN
☐ 25. ☐ Frame Relay
☐ 26. ☐ Private Line T1, T3, FT-1, SONET
☐ 27. ☐ Other LAN/WAN Environment

NETWORK OPERATING SYSTEM

A B
☐ 28. ☐ Windows NT/Windows 2000
☐ 29. ☐ Novell (NetWare 5.X)
☐ 30. ☐ Novell (NetWare 4.X)
☐ 31. ☐ Novell (NetWare 2.X,3.X)
☐ 32. ☐ LINUX
☐ 33. ☐ Microsoft (LAN Manager)
☐ 34. ☐ Banyan (Vines)
☐ 35. ☐ IBM (LAN Server)
☐ 36. ☐ Other Network Operating System

COMPUTER OPERATING SYSTEM

A B
☐ 37. ☐ NT Workstation
☐ 38. ☐ Windows 2000
☐ 39. ☐ Windows 98/95/3.1
☐ 40. ☐ Intel based UNIX
☐ 41. ☐ RISC based UNIX (incl. SOLARIS)
☐ 42. ☐ LINUX
☐ 43. ☐ DOS
☐ 44. ☐ OS/2,OS/2 WARP
☐ 45. ☐ OS/400
☐ 46. ☐ IBM MVS/VM/VSE/ESA
☐ 47. ☐ Digital VMS
☐ 48. ☐ Macintosh
☐ 49. ☐ Other Computer Operating System

None of the above (1- 49) A ☐ 50. B ☐

11. Which of the following hardware platforms are installed/planned in your company?
(check ALL that apply)

A - Mainframes (Large Scale)

1. ☐ IBM
2. ☐ Other

B - Minis (Midrange)

1. ☐ IBM RS/6000
2. ☐ IBM AS/400
3. ☐ Digital/Tandem/Compaq
4. ☐ Unisys
5. ☐ H-P
6. ☐ Other

C - Workstations

1. ☐ Sun Microsystems
2. ☐ H-P
3. ☐ Digital/Compaq
4. ☐ IBM
5. ☐ Silicon Graphics
6. ☐ Other

12. What is the estimated gross revenue of your entire company/institution?
(check ONE only)

1. ☐ $20 Billion or More
2. ☐ $10 Billion to $19.9 Billion
3. ☐ $1 Billion to $9.9 Billion
4. ☐ $500 Million to $999.9 Million
5. ☐ $100 Million to $499.9 Million
6. ☐ $50 Million to $99.9 Million
7. ☐ $10 Million to $49.9 Million
8. ☐ $5 Million to $9.9 Million
9. ☐ $4.9 Million or less
10. ☐ None of the above

13. For which areas outside of the US do you have purchase influence?
(check ALL that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ Africa
7. ☐ Canada
8. ☐ None

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Carriers & ISPs

The Internet, Extranets, Interexchange and Local Carriers, Wireless, Regulatory Affairs

Briefs

PSINet is deploying **Ennovate Network's** Envoy 1600 IP edge switches throughout its network. PSINet and Ennovate last week signed a multiyear, multimillion-dollar deal.

While the companies wouldn't confirm how much the deal is worth, PSINet did say it expects to roll out hundreds of the Envoy 1600 devices. Ennovate last week also announced that the Envoy 1600 now supports native frame relay switching, which offers business users and carriers a migration path to full IP switching.

PSINet: www.psi.net; Ennovate: www.ennovatenetworks.com

USWeb/CKS last week introduced its Internet Application Manager (IAM) for e-commerce service. USWeb's latest application-hosting service lets business users outsource their high-end Web-hosting and e-commerce sites. USWeb offers 24-7 management and monitoring in addition to integrated back-end systems support. The service is available now. Pricing starts at $25,000 per month.

USWeb: www.uswebcks.com

AT&T Wireless is rolling out a new technology from **ScoreBoard,** a software company in Herndon, Va., which will let the wireless carrier get maximum performance out of each cell site on its network. ScoreBoard offers a service called ScoreBoard 3.5, which analyzes a carrier's network data, pinpoints problems and recommends the best way to fix them. The service targets problems such as high interference and overloaded cell sites and does so in near real time. These types of problems cause poor call quality and dropped calls.

AT&T Wireless: www.attws.com

AT&T taps execs in reorganization

Armstrong chooses Roscitt and Earley to oversee enterprise networking services.

BY DAVID ROHDE

NEW YORK — Forget about frame relay, ATM and Internet services all being housed in different organizations at AT&T.

As part of a wide-ranging reorganization, AT&T Chairman C. Michael Armstrong last week tapped two executives to head up a newly converged business unit handling all the company's enterprise networking services.

The move occurred at a conference for investment analysts in New York at which Armstrong and his deputies talked up AT&T's prospects and created a slight opening for competitors to get in on AT&T's cable Internet buildout.

Roscitt will be president of AT&T Business Services.

Rick Roscitt, currently president of AT&T Solutions — the company's outsourcing and managed-network unit — will become president of AT&T Business Services and head the company's entire voice and data enterprise networking effort.

Earley will head up AT&T Data and Internet Services.

Kathleen Earley, currently president of AT&T Internet Services, will add the frame relay, ATM and private line portfolio as the new president of AT&T Data and Internet Services. Earley will report to Roscitt, who in turn will report to Armstrong.

The appointments fill a leadership gap that resulted when the former chief of AT&T Business Services, high-profile telecom veteran Bob Annunziata, resigned abruptly last spring. Annunziata, who previously ran Teleport Communications Group — the competitive local exchange carrier for businesses that AT&T acquired in 1998 — is currently CEO of high-flying start-up Global Crossing.

Annunziata had been temporarily replaced by AT&T veteran Michael Keith. But Keith had retained a low profile and last week was shifted into a new position — head of a new fixed-wireless local loop venture within AT&T's sprawling wireless unit. That unit is slated to be covered by a separate tracking stock beginning next spring.

Roscitt and Earley promise new integration between traditional and Internet-based offerings. For example, they touted AT&T's recently introduced IP-Enabled Frame Relay — a service that uses IP addressing rather than frame relay routing tables and multiple permanent virtual circuits to achieve any-to-any connectivity in a corporate network. "And we're going to catapult ourselves into the Web-hosting business," Earley says.

Armstrong says AT&T will complete at least half of its promised 26 Web hosting

See **AT&T**, page 33

NorthPoint enlists Equinix to speed DSL

BY TIM GREENE

SAN FRANCISCO — Digital subscriber line (DSL) specialist NorthPoint Communications is trying to make DSL more attractive by speeding links between customers and the Web-based services they seek.

NorthPoint will establish hub sites within facilities run by Equinix, where other service providers also house their gear. Collocating like this allows fast, direct connections among Equinix customers' networks rather than slower, direct wide-area links to each other.

That in turn gives NorthPoint customers faster access to certain Internet content as well as services provided by application service providers (ASP), according to Michael Malaga, president of NorthPoint.

Today, NorthPoint's customers can buy a high-speed DSL connection to an ISP. But once customers start pulling information off the Internet, the actual speed may be considerably slower because of Internet bottlenecks. For example, a 1.5M bit/sec DSL connection drawing data from a server connected to the Internet at 256K bit/sec will be limited to the speed of the server connection.

Equinix is setting up a network of secure buildings where content providers such as large e-business sites and ASPs can lease space for their servers. When end users seek content from Equinix customers, the content is delivered from the nearest Equinix site. For many end users, that will eliminate time-consuming trips across the Internet that can slow down content delivery.

With that bottleneck gone, customers are more likely to want a high-speed Internet link such as DSL because the overall link from the content to customers will be faster, Malaga says.

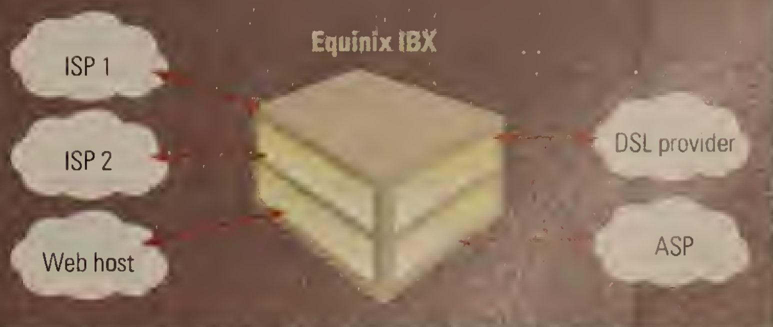
NorthPoint will install gear within Equinix sites, known as Internet business exchanges (IBX), so Northpoint customers will be able to directly access certain other service providers.

For example, if a customer wanted to

See **Equinix**, page 33

Equinix interconnections

Equinex Internet business exchanges (IBX) house carriers, ISPs, ASPs and other content providers at a single site. These service providers can connect to the site and each other via a single trunk rather than many.



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AT&T,

continued from page 29

centers by the end of 2000, with the rest expected to follow in 2001.

But Earley rules out a widespread move by AT&T into the application service provider (ASP) business. Instead, she says AT&T's Web-hosting business could have ASP, as well as enterprise, customers.

Another of AT&T's most talked-about initiatives — cable access over Internet lines — also appeared set for two more years of development. At the conference, Armstrong announced that AT&T and ISP MindSpring Enterprises had sent a letter to William Kennard, chairman of the Federal Communications Commission, in which AT&T laid out a set of principles under which AT&T would open its cable lines to all Internet providers. But he also said the principles would not take effect until AT&T's exclusive contract with Excite At Home expires in 2002.

But the move was dismissed by some observers as a careful bit of choreography that really didn't hold out the prospect for many other ISPs other than the AT&T-affiliated Excite At Home to make a foray into high-speed cable access any time soon.

Some ISPs said a more substantive move would be if AT&T actually offered them a contract spelling out the exact terms to gain access to AT&T cable lines. But Armstrong responded that it was too early for that. "The frustration of the ISPs is that the contract doesn't exist," Armstrong said. "We just issued the principles."

Asked whether AT&T could revise its contract with Excite At Home before it expires, Armstrong said that wasn't up to him. "That relationship is not just with AT&T," he said. Excite At Home also has contracts with other cable companies adding up to a total of 60% of U.S. homes having access to cable, Armstrong said.

The letter to Kennard also did not appear to change AT&T's long-held stance that the FCC should not impose any mandates to provide cable open access, and instead should let cable companies determine to whom to open their networks. ◪

www.nwfusion.com

ARMSTRONG SAYS. . .

Listen to a replay of AT&T CEO C. Michael Armstrong's remarks from last week's investment analyst conference.

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find it online

Equinix,

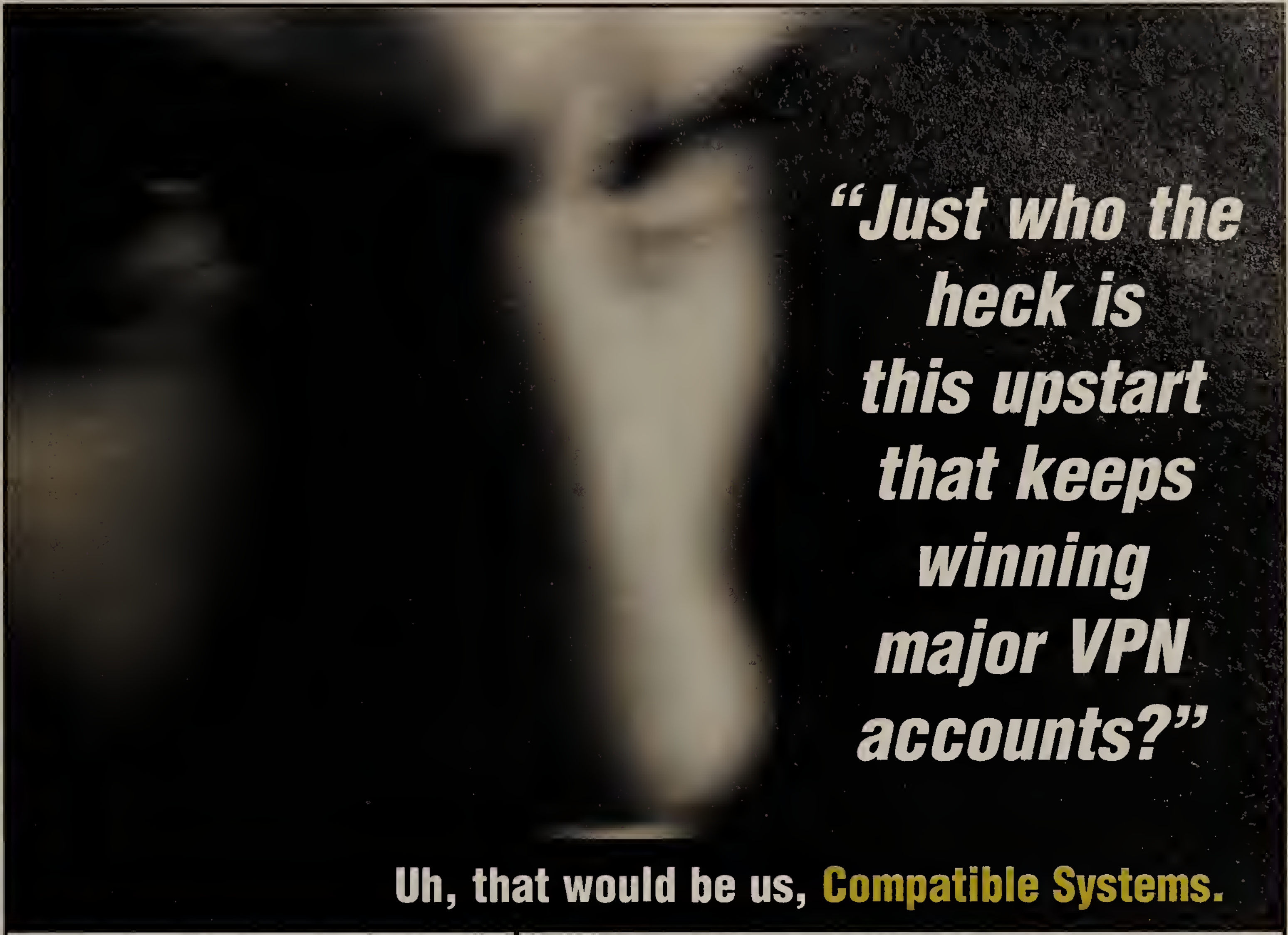
continued from page 29

link to an ASP that had a server in an IBX, Northpoint would be able to link up with that ASP directly within the IBX. By meeting at a common site, they eliminate the need to set up a WAN link directly to the ASP.

NorthPoint will be able to link its customers to multiple content providers within an IBX. So if customers want to buy content from multiple providers, they could do so over the same DSL link.

NorthPoint is also making a reported $5 million investment in Equinix to help it establish its IBX sites, Malaga says.

Other companies investing in Equinix include America Online, Cisco, Dell Computer, E*Trade, Microsoft, Reuters, Benchmark Capital and The Carlyle Group. ◪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Eye on the carriers . David Rohde

WATCH THE 'T' ON THOSE STOCK TICKERS

Pssst, buddy, how'd you like to own some AT&T stock?

You say you'll pass? I understand. Somehow it's hard to get fired up about owning AT&T stock, compared with, say, a luscious hunk of Cisco or Lucent — or even a rival such as MCI WorldCom, which knows how to take care of its shareholders. That's AT&T CEO C. Michael Armstrong's problem right there — and sort of your problem, too, if you use AT&T.

AT&T is trying to remake itself into a sleek e-commerce transport and "solutions" company, yet it remains the quintessential widows and orphans stock. All year the stock has fiddled between $50 and $60, weighed down by a residential long-distance price war and AT&T's holdings in the iffy cable business. But what do stockholders care, as long as they get dividends?

Last week, Armstrong called a meeting of Wall Street analysts with the none-too-subtle agenda of getting AT&T's stock price moving. (The book of handouts was titled "analysT meeting" — "T" being AT&T's stock symbol.)

Armstrong started by announcing that the company's wireless business would go into a new tracking stock. That's fine for wireless. But then he turned to the task of making each of the other business units remaining in the AT&T parent look like a winner. That took some doing.

At one point, consumer long-distance chief Gene Lockhart reported the apparently doleful news that his revenue would decline 3% to 5% in 2000 because of the price war. Not to worry, he said — his division's expenses are projected to drop 6% to 8%, so profits will actually rise. Now that's a story to set investors' hearts racing!

AT&T does have a lot to recommend it, from sizzling 50% growth in outsourcing and managed services to a big increase in business and residential local services.

But AT&T still lacks some core competencies. For example, the company has announced it will build 26 Web hosting centers but has hardly begun the job — even the one in Manhattan won't open until next month. How much simpler it would be if AT&T could make like a Cisco, Lucent or MCI WorldCom and just buy one of the top Web-hosting firms. But that requires currency — a hot stock — one people want to have.

AT&T also needs to have the confidence to spend the money that a healthy stock provides. The carrier has a legacy of baby-step spending on services that its bureaucracy doesn't really embrace. The result has been a series of capacity shortages — frame relay in 1994 and 1995; T-1 access ports in 1997 and 1998; Internet dial-up earlier this year; and even a recent failure to put on enough capacity for its booming wireless business right in New York City.

And New York's no place to drop the ball, because AT&T needs Wall Street's help to get itself valued as a growth play rather than a utility. That would really allow the company to make all the investments it needs to stay ahead of the enterprise network curve.

Rohde is a senior editor with Network World. *He can be reached at drohde@nww.com.*

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Fixed wireless users seeing more choices

FIXED WIRELESS SERVICES

Carriers angling to offer an array of emerging technologies.

BY DENISE PAPPALARDO

As fixed wireless service choices continue to multiply and evolve, business users will need to keep close tabs on the players and rules in this rapidly changing segment of the WAN market.

Fixed wireless services offer business users another option beyond landline local access, an alternative that typically promises higher-speed services at competitive rates.

WinStar and Teligent have been betting the farm on fixed wireless services for a couple of years. And now the three big interexchange carriers (IXC) and Craig McCaw's Nextlink Communications are heating things up with new service promises for business users, says Michael Smith, a program director at Stratacast Partners, a consulting firm in Mountain View, Calif.

Last week, AT&T reaffirmed its plans to offer customers fixed wireless local loop services. AT&T will be using its existing personal communications services spectrum to offer a local loop bypass service in areas where it will not offer cable or traditional landline local services.

Earlier this year, MCI WorldCom and Sprint acquired a handful of multipoint multichannel distribution services (MMDS) providers to directly reach more users in local markets. Combined, the carriers have invested almost $1 billion in picking up these fledgling MMDS companies that were all in financial disarray.

While MMDS has been around for about 10 years, it is now attractive to IXCs such as MCI WorldCom and Sprint because the Federal Communications Commission is in the process of changing the rules that govern the technology. MMDS — which is in the 2.5-GHz to 2.7-GHz spectrum — was designed as a wireless cable television technology supporting only one-way network transmissions. But now the FCC is expected to allow MMDS license holders to support two-way services that will let users send and receive data at up to 10M bit/sec.

> ■ **"There wasn't much incentive for vendors to develop MMDS equipment in the past because so many of the license holders didn't have sound financial plans."**
>
> Michael Smith, program director, Stratacast Partners

But many challenges lie ahead for MCI WorldCom and Sprint. "We're hoping the FCC will make a ruling by April that will open up the spectrum," says John Stupka, president and CEO of MCI WorldCom's SkyTel wireless division.

Now that MCI WorldCom and Sprint are in the MMDS game, more vendors will be willing to develop better technology, Stupka says.

"There wasn't much incentive for vendors to develop MMDS equipment in the past because so many of the license holders didn't have sound financial plans," Stratacast's Smith says.

However, business users shouldn't expect to see widely available MMDS services until the end of next year. Moreover, analysts believe that MMDS will be offered primarily as a consumer service, perhaps for home office users, but mostly as a means of bypassing local exchange carriers.

Business users may find the most compelling offerings coming from local multipoint distribution services (LMDS) carriers and the WinStars and Teligents of the world, says Chris Whitely, a project manager at Insight Research in Parsippany, N.J. LMDS carriers, such as Nextlink, are starting from ground zero and are still testing services, but LMDS holds more promise than MMDS, he says.

Nextlink is expected to roll out commercial LMDS voice and data services this month, says Doug Carter, the company's chief technical officer. The services will most likely be launched in Dallas and Los Angeles, cities where Nextlink has been conducting trials.

The users who will benefit most from fixed wireless services such as LMDS are those who don't have fiber running directly to their buildings, Smith says. "The cost of deploying a fixed wireless service is by far cheaper than a carrier deploying miles of fiber-optic cable."

Nevertheless, Nextlink says its LMDS services most likely will not be cheaper than its standard access services, a tactic that is sure to raise eyebrows.

As holder of the largest number of LMDS licenses in the U.S., Nextlink says it will be rolling out the technology to office parks and buildings where high-speed fiber-optic network services are not available. In other words, Nextlink is targeting customers whose choices are a 56K bit/sec link or an LMDS service that can combine local, long-distance and data on one connection at up to 1G bit/sec.

While targeting users with limited choices can be an effective initial strategy, it probably won't work long-term in markets such as New York and Philadelphia because business users typically have more choices there, Smith says.

Wireless connectivity, present and future

Some fixed wireless broadband technologies that are in use and under development:

Technology	Spectrum	Data transmission speeds	Availability
Local multipoint distribution services (LMDS)	27.5 GHz to 31 GHz	1G bit/sec	Trials underway
Multipoint multichannel distribution services (MMDS)	2.5 GHz to 2.7 GHz	10M bit/sec	Yes, but only limited two-way distribution
Digital microwave	24 GHz, 28 GHz, 38 GHz	Up to 155M bit/sec	Yes, nearly 25,000 business subscribers

"Fixed wireless carriers are going to have to be creative in rolling out service offerings," Whitely says.

For example, Teligent, which offers fixed wireless services in 34 markets and boasts 7,500 customers, offers business users an interesting guarantee: If customers are not satisfied with its SmartWave local voice and data services, Teligent will switch them back to their previous services at no charge.

WinStar, which offers fixed wireless through digital microwave technology in the 28-GHz and 38-GHz spectrums, is offering customers a free year of local voice services if they sign a three-year contract.

In addition to its digital microwave services, WinStar holds a handful of LMDS licenses and is currently running trial tests. WinStar expects to roll out commercial LMDS services sometime next year.

Teligent and WinStar also have a leg up on the new fixed wireless players, point-to-multipoint services. Teligent has point-to-multipoint services in 20 of its 34 markets and WinStar has six of its 70 markets offering the service.

Point-to-multipoint is essentially the Holy Grail of fixed wireless services in that it supports on-demand bandwidth. That ability means that users only pay for what they use, eliminating the fixed monthly fee for a 45M bit/sec chunk of bandwidth that reaches full capacity only a couple of times per month.

Senior Editor David Rohde contributed to this story.

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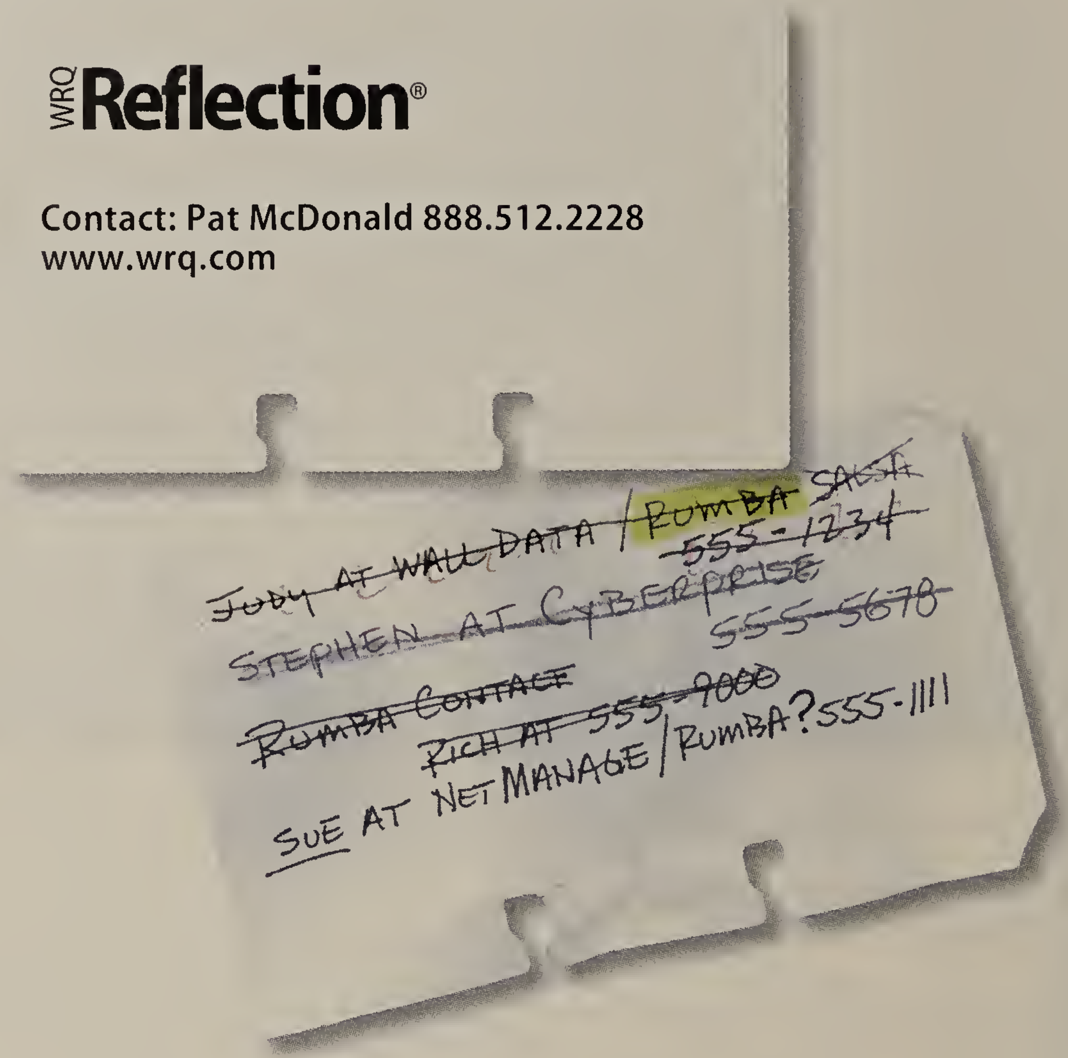
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Briefs

Ipswitch of Lexington, Mass., this week will ship a new version of its iMail Server for Windows NT that features improved security, an easier interface for administrators and a greater customization ability. Deployed on more than 11,000 servers, iMail Server supports the Simple Mail Transfer Protocol, Post Office Protocol (POP) and Internet Message Access Protocol standards, and is used for Web-based e-mail access.

With Version 6, Ipswitch now supports the Secure Sockets Layer protocol for encrypting messages and Authenticated POP for greater password protection. IMail Server 6 starts at $1,000 for a 250-user license and costs $1,500 for an unlimited number of users.

Ipswitch: www.ipswitch.com

Britain's **Virgin Entertainment Group** will distribute at least 10,000 units of Boundless Technologies' new iBrow Internet access appliances to select customers. The iBrow is a small, sleek, flat-screen device with a wireless keyboard, designed for accessing the Web via a built-in 56K bit/sec modem. Customers will have direct access to a range of products and services through Virgin's VirginConnect Web site. The first units will be ready in early 2000.

Schlumberger last week shipped the second version of its Cyberflex Access Software Developer Kit for supporting smart-card security in Windows-based applications. The latest version of the tool kit, available at www.cardstore.slb.com, will enable a single X.509 digital certificate on a smart card to access applications supporting Microsoft CryptoAPIs or RSA's Cryptoki Cryptographic Token Interface.

The best app servers you've never heard of

The likes of open source programs Zope, Midgard and Enhydra gain supporters.

BY APRIL JACOBS

Software from the likes of Allaire, Oracle and the Sun-Netscape Alliance tend to get most of the attention in the application server market. But a group of lesser-known open source technologies is becoming increasingly popular for building application servers.

These offerings — with intriguing names such as Enhydra, Midgard and Zope — feature most of the same pros and cons of other open source software. They are free and tend to be more easily customizable than their commercial counterparts, but generally lack the service and support infrastructure on which commercial software users have come to rely.

Users of open source application servers swear by the servers, which like other application servers often sit between back-end data sources and Web servers. Most of the popular open source application servers are supported by project teams and Web sites with plenty of documentation and resources for use by potential developers.

But the bottom line, says open source user Matt Fahrner of Burlington Coat Factory Warehouse in Burlington, N.J., is still that "you have to be prepared to get down and dirty and go into the code if you have problems."

While it's tough to measure use of open source applications, industry observers say Zope is among the more popular open source application servers. Based on Python, an object-oriented programming language, Zope lets end users reuse chunks of code over and over — making it ideal for building constantly changing Web applications. At Indigo Networks, a Zope application

See **Open source**, page 47

Something for nothing?

While open source application servers don't come packaged with service and support, they can be downloaded for free over the Web. Here's a sampling of such servers:

Server	Description
Enhydra	The Java-based application server can be used as a tool for engineers and end-user interface designers to build Web applications. It lets developers reuse code in a modular fashion when building Web sites and applications, saving development time.
Midgard	Aimed at ISPs, its strengths lie in Web publishing and design. Its features include content administration, host and layout administration, browser-based access and group administration.
Zope	Ideal for building Web portals and for content management. It was developed on Linux/Intel and is supported on Linux/Intel, Solaris (SPARC and Intel) and Windows. It is based on Python, an object-oriented programming language.

Eprise targets tricky Web site management tasks

Version 2.5 of Participant Server features easier-to-use, forms-based interface.

BY CAROLYN DUFFY MARSAN

FRAMINGHAM, MASS. — If you're in the market for Web content management software, you might want to take a look at Eprise. The start-up is on a roll, having recently raised $25 million in venture capital and begun shipping Version 2.5 of its Eprise Participant Server package.

Eprise has raised $38.5 million in the two years since it was renamed from Novalink, and has changed its focus from building Web sites to providing software to Web site developers. Eprise has a seasoned management team that includes Joe Forgione, a former Lotus vice president, as president and CEO.

Eprise is attacking the problem of runaway Web-site development costs. Companies spend an average of $1.3 million per year to operate their Web sites, according to Forrester Research, a Cambridge, Mass., market research firm that also predicts the market for Web management tools will hit $1.2 billion this year.

Participant Server allows companies to distribute responsibility for Web site content development and provides such management tools as access control, workflow and e-mail approvals. Version 2.5 includes an easy forms-based interface for entering content via Web browsers, a global search-and-replace function and expanded support for Microsoft BackOffice, including a Microsoft Management Console plug-in.

Users can upload files via popular Web authoring tools or word processing software. No knowledge of HTML is required.

Participant Server takes a component-based approach to Web site content, so words are separate from graphics and design in terms of who is allowed to update information. The software also can be used to manage extranets and to provide distributors and partners with the ability to control content about themselves.

Participant Server runs on top of Windows NT and Unix Web server soft-

See **Eprise**, page 47

Web Applications
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WatchPoint helps track your Web services

AG Group attempts to provide enterprise Web monitoring along with real-time Internet traffic analysis but comes up a bit short.

BY BOB CURRIER,
NETWORK WORLD
TEST ALLIANCE

Network World REVIEW
Network management

Would you like to know which search engines referred the most customers to your e-commerce server? Or maybe you're interested in understanding where your FTP traffic is coming from?

AG Group's WatchPoint software attempts to deliver a comprehensive HTTP and FTP traffic analysis package that can answer all these questions, but the product doesn't go as far as we think it should to support an enterprise Web deployment.

WatchPoint 2.0.1 — which shipped late last month — is a real-time Internet traffic analysis program that monitors HTTP and FTP traffic to and from network servers.

WatchPoint consists of two applications: the Monitor and the Console. The Monitor is a data-gathering engine that resides on a Windows NT workstation located on the same network segment as the systems to be monitored. The Console, written in Java, can be deployed anywhere on the Internet and communicates with the Monitor software through a TCP/IP connection. The Console provides an interface to information collected by the Monitor and is used for system configuration and management, and for analyzing reports.

WatchPoint comes in two sizes: the $1,000 Small Business Edition, which requires the Monitor and Console to run on the same server and is designed for single-server installations; and the $3,000 Enterprise Edition, which provides distributed, multiserver capabilities. We tested the Enterprise Edition.

WatchPoint provides an account-creation feature that lets you specify access privileges for each HTTP and FTP server monitored. You can deny access rights to individual users, or you can restrict access to an individual machine based on IP address and subnet mask.

While the user-account feature worked well — we were able to block access and restrict rights — we found that the lack of a group feature made managing large numbers of users cumbersome. The ability to define a group name and assign to it blocks of users would make WatchPoint more effective in situations where multiple administrators are accessing the Monitor.

The HTTP and FTP server analysis windows included with the Console gave us a clear view of network traffic and the ability to see where our traffic came from, what the referring pages were, what type of browsers were used, and what pages end users viewed. The analysis window also provides information on HTTP error types and system performance. The analysis screen is nicely laid out with a good mixture of textual and graphical data. Choosing between usage, network and error data is an easy mouse click.

> ■ **The ability to define a group name and assign to it blocks of users would make WatchPoint more effective.”**

WatchPoint allows you to generate HTML reports that provide detailed information on transactions, content and quality of service. You can customize these reports using the Console and then save them either on the system running the Console or on a network drive.

While the information provided by the analysis window is useful, we found it disconcerting that there wasn't a provision for automatic screen refresh. We had to click on an icon inside the analysis screen to refresh the data. A periodic auto-refresh would be quite handy. AG Group confirmed this feature would be added in a future release.

We also found that some of the display settings weren't saved as we moved between screens. For example, the listing of incoming IP addresses allows you to show only the top 10 (the default), 20, 50, 100 or 200 addresses. If we set the filter for the top 100 and then visited a different screen, the filter reset back to the top 10.

We were disappointed by the lack of an e-mail or paging notification engine. Although WatchPoint is primarily a reporting tool, being notified when selected URLs were visited or certain IP addresses were spotted would be useful.

We noticed that the connection between the Console and the Monitor could be unstable if left open for an extended period. We left the Monitor running overnight on several occasions; when we came back in the morning, we found the connection terminated and a Java error message on the screen.

The Monitor didn't noticeably load down the workstation it was running on. We found only a slight increase in CPU loading during periods of moderate network activity. WatchPoint ships with a tool for analyzing the performance of the capture engine. This tool lets you determine whether or not the Monitor is dropping packets — a sure sign of system overload. During the two weeks we tested WatchPoint, it never dropped a packet.

WatchPoint comes with excellent documentation. You get an easy-to-read 125-page manual that covers all aspects of installation and operation of the software and includes many useful screenshots.

While WatchPoint provides usable information about our Web deployment, its lack of notification abilities, time-out errors and poor account management make us hesitate to recommend this product. We suggest waiting for the next release.

Currier is director of data communications at Duke University in Durham, N.C., and the 1998 Grand Prize winner in the Excellence in Campus Networking competition sponsored by CAUSE, a user group for computer professionals in higher education. He can be reached at robert.currier@duke.edu.

ScoreCard

WatchPoint 2.0.1	
Functionality (40%)	7
Administration (35%)	7
Performance (10%)	7
Installation (10%)	9
Documentation (5%)	10
Total score	7.35

Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score.

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Pros

- ▲ Great documentation
- ▲ Easy installation

Cons

- ▼ No paging or e-mail notification
- ▼ Poor account management
- ▼ Unstable network connection between Console and Monitor components
- ▼ Lacks “state-saving” feature when moving between management screens
- ▼ No auto-refresh

How we did it

We installed the Enterprise Edition of the WatchPoint Monitor on a Dell GX-1 client with a 500-MHz Pentium III CPU and 256M bytes of memory. We also installed the Monitor software on a Cabletron Ethernet hub connected to our Web and FTP servers. We ran the WatchPoint Console on several machines, including a Toshiba Equium 7100D and an IBM ThinkPad 600, both running Windows 98. We monitored HTTP and FTP traffic to our departmental Web server, a Unix SparcServer 10 machine, and another Microsoft Internet Information Server Web server running on an NT-based Dell GX-1 box.

NetworkWorld TEST ALLIANCE

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MOTOROLA EMBEDDED SOLUTIONS

Tibco takes new pass at corporate portals

BY JASON MESERVE

PALO ALTO — Tibco's application integration experience is key to its new corporate portal offering designed to help companies combine data from multiple applications into a single Web view.

TIB/Portal Builder, a Java-based server that uses a publish-and-subscribe methodology to collect data from an array of data sources, is based on Tibco's experience in helping build Internet portal sites such as CBS Sportsline. Publish-and-subscribe allows an application to broadcast data changes to recipients who want to receive the information.

"Tibco is taking a unique position on the portal challenge, and that's a positive thing," says Joshua Walker, an analyst with Forrester Research in Boston. "A lot of portals portray the right type of interface — like a MyYahoo — but for the enterprise, you need to be able to organize applications, too."

As part of the TIB/ActiveEnterprise suite, Portal Builder can subscribe to any TIB-enabled application and receive changes to the data in real time. TIBs are pieces of software that monitor applications such as SAP R/3 and broadcast changes over a net using IP Multicast technology. Portal Builder can subscribe to applications to receive changes, take the data in and publish it to a Web site using Java servlets.

Other portal building systems use a pull methodology to gather information from sources, with updates occurring in timed intervals, creating a lag between when the data is updated in its native application and when it's posted to the corporate portal. "We can teach data sources to shout the events out to the wire, and the portal becomes the recipient of the events," says Larry Neumann, director of product marketing at Tibco.

Portal Builder uses HTML templates so administrators and end users can customize the look and feel of data presentation.

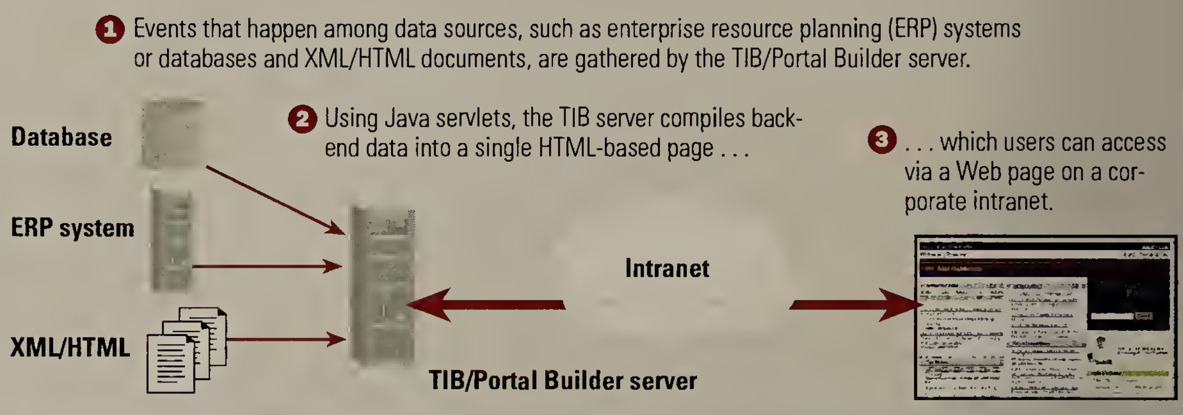
WallStreetView.com will use Portal Builder to upgrade its portal site early next year. CEO Shawn Carpenter says Portal Builder will allow users greater flexibility in personalizing the site's look and feel. One option will be a datastream that will let investors see their portfolios' value updated in real time.

Though Java-based, Portal Builder has only been tested on Windows NT and Solaris. It costs $50,000 per server.

Tibco: www.tibco.com

Portaling corporate data

How Tibco's publish-and-subscribe technology brings information on various corporate data sources to desktops:



① Events that happen among data sources, such as enterprise resource planning (ERP) systems or databases and XML/HTML documents, are gathered by the TIB/Portal Builder server.

② Using Java servlets, the TIB server compiles back-end data into a single HTML-based page . . .

③ . . . which users can access via a Web page on a corporate intranet.

[illegible] in some areas. 986-4

Open source,

continued from page 41

server runs a program that lets employees update the company's online shopping application. The application features products from multiple merchants and needs frequent updating, according to Ted Patrick, Indigo's chief information officer. "The Zope application server assembles everything on the fly," he says.

One of the primary reasons Indigo didn't choose a commercial application server platform, such as Microsoft's Active Server Pages, was the inability of such products to consistently reuse blocks of code. "You find that if you change one thing, you have to make a lot of changes in many places," Patrick says.

Another open source application server, Enhydra, is written in Java and is used for creating Java application servers that can either directly take HTTP-based requests or serve up data through most Web servers. One of Enhydra's strengths lies in its XML compiler's ability to separate business logic and presentation of pages — if the two are combined, it is trickier for developers to make changes. At Softcom, an application services provider, Enhydra helps developers separate Java and HTML in developing Web applications for interactive Web sites.

Midgard is also gaining notice in the open source community. Written in a PHP scripting environment, Midgard is aimed at end users who need to serve up Web-based applications on the fly. Midgard servers reside between an Apache Web server and data on an Open Database Connectivity-compliant database.

While open source software lacks the toll-free support lines that users of commercial software have become accustomed to, open source proponents say there is plenty of support available and more is emerging. In fact, users of open source application servers might find they get software problems fixed faster than they would if they were dealing with vendors, says Scott Shaw, president of Antarctica IT, a Framingham, Mass., firm that specializes in supporting open source code. That's because the virtual community of open source software engineers is unhampered by the rigid schedules that result in long-awaited service packs for traditional applications and operating systems, he says.

Companies such as Antarctica are also filling the void for open source support. Digital Creations, a company formed by the creators of Zope, helps customers install the free application server and build applications on it.

Still, Digital Creations CEO Paul Everitt says he "lives and breathes" the uncertainty that surrounds open source code every day trying to sell services into corporate accounts. But with validation for open source growing in the form of public companies such as Red Hat, Everitt says the job is getting easier. ◪

TAKE'EM FOR A SPIN

Download demos of Enhydra, Midgard and Zope, and then let us know what you think.

DocFinder 5928

find it online

Eprise,

continued from page 41

ware and supports technologies such as XML, Component Object Model and Java. The software typically costs around $100,000, including server licenses and professional services. Eprise's competitors include Vignette, Interwoven and BroadVision.

Available for less than a year, Participant Server is in production mode at 35 companies, including Hemisphere Group, a life insurance provider in Cambridge, Mass. Hemisphere uses Participant Server to manage the content on an extranet that provides information to 40 independent insurance agencies which resell its products. John Analambidakis, vice president of systems, says the software helps him keep thousands of Web pages up-to-date for more than 500 end users.

"We have the marketing staff just fill in text in the templates and — wham — the information is right up on the Web," Analambidakis says. "I'm not doing any HTML development unless I want to."

Eprise: www.eprise.com

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'Net Insider . Scott Bradner

THE IMPORTANCE OF BEING A DYNAMIST

Three and a half years ago I tried to explain to one of the judges in the Communications Decency Act case that too much reliance on centrally mandated standards would hurt the Internet. I was not as articulate as I would like to have been. I was only able to say: "What achieved success was the very chaos that the Internet is. The strength of the Internet is that chaos. It's the ability to have the forum to innovate." Virginia Postrel's recent book, *The Future and Its Enemies,* does a lot better job than I did in explaining what I was trying to say.

This is a wide-ranging book, taking on everybody from Newt Gingrich to the Unabomber. In the words of the author: "This book examines the clash between stasis and dynamism, and explores those contrasting views." I now know that I fall into the dynamism camp, and what I was trying to explain to the judge back then was some of the implications of following the stasis path.

Historically, the Internet has been an environment in which to experiment. There have been a few basic rules. The most important are the standards for IP and TCP.

There are other important standards for promulgating routing information and the like, but the real power of the Internet idea is that there are not mandated standards for what can run over the 'Net.

Anyone who adheres to TCP/IP standards can create applications and run them without getting anyone's permission. No ISP even has to know you are experimenting (or playing, which is also OK). This freedom produces unpredictable results. New industries can be created almost overnight and existing industries severely affected. Look at the impact of MP3 on the recording industry, for example.

The stasis camp wants to control the innovations, or "shape technology," in the words of Gingrich. A dynamist wants to let the market decide. So far, the Internet has been allowed to follow the dynamism path — the 'Net has been mostly ignored by the traditional telecommunications industry. Being ignored was the best thing that could have happened.

A couple of years ago a friend of mine spent some time explaining the Internet to people in state government. He reported that the dominant theme of the bureaucrats' reactions was: "How do we stop or control this thing?" Lucky for innovation that the bureaucrats were not paying attention when they could have had a serious impact.

But the threat is not over. The stasists fear the complexity and unpredictability the Internet is bringing to the economy and society. They will continue to try to find ways to control its impact. As a dynamist, I will keep trying to find ways around their fears.

Disclaimer: Viewed over Harvard's 363 years, even the most static institutions turn out to be dynamic. But the above plea for chaos is mine.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

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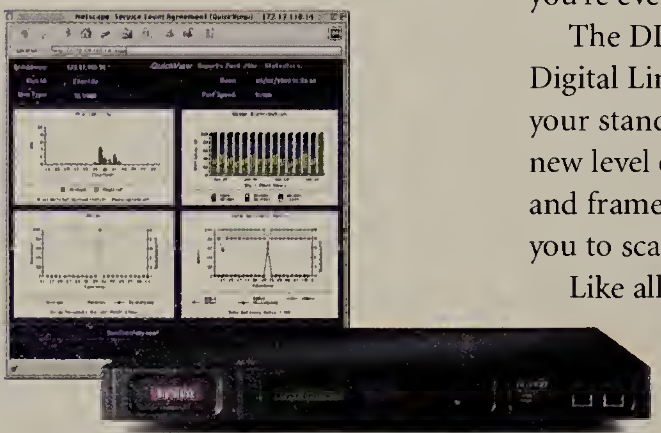

The low-profile DL5400 MultiLink Access Device features a modular software and hardware design which allows easy reconfiguration for future upgrades. The unit incorporates web-based network management.

DIGITAL LINK Net Access Solutions

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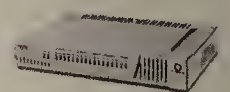

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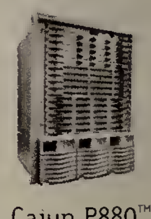

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New protocol connects voice over IP

BY LARRY YOUNG

Mention voice over IP and most people have at least heard of the H.323 protocol. Well, if H.323 can be considered vanilla, then Session Initialization Protocol (SIP) could be strawberry. It's not any better or worse, just different.

SIP is part of an Internet Engineering Task Force (IETF) proposal to replace parts of H.323. Just as H.323 is a collection of protocols, SIP is one of several protocols that will work together to complete calls.

SIP is an application layer, control/signaling protocol for creating, modifying and terminating sessions with one or more participants. These sessions may include Internet multimedia conferences, distance learning, Internet telephone calls and multimedia distribution. SIP can invite persons and "robots," such as media storage services, to participate in a call.

The protocol may be used to initiate sessions, invite members to sessions advertised by other means or initiate multiparty calls using a multipoint control unit. SIP transparently supports name mapping and redirection services, allowing the implementation of ISDN and intelligent network telephony subscriber services such as personal mobility.

The protocol does not offer conference control services, nor does it prescribe how a conference is to be managed. SIP does not allocate multicast addresses and it does not reserve resources, but it can convey to the invited system the information necessary to do this.

SIP supports five facets of establishing and terminating multimedia communications: user location, capabilities and availability, call setup and call handling.

Callers and call receivers are identified by SIP addresses. A caller first locates the appropriate server, then sends a SIP request (probably an invite). In a perfect world, the request arrives at its destination, where the client accepts the call by returning a SIP response code 200. As with other TCP/IP reply codes, a response code that starts with a 2 is good. Then the originating caller sends an acknowledgement back to the recipient, which is a bit unusual because the station that initiates the call also sends the acknowledgement.

SIP can communicate via multicast, a mesh of unicast relationships, or a combination of multicast and unicast.

The objects addressed by SIP are users at hosts, which are identified by a SIP URL. The user part is a user name or a telephone number. The host part is a domain name or IP address.

SIP uses a variety of servers, each with its own purpose. There are user agent servers, proxy servers, redirect servers, and registrars. There is also something called a location server running a location service, which may be collocated with a SIP server.

A SIP transaction consists of a SIP request and the appropriate response. To facilitate pairing a request with its response, there are several fields that contain identical values on the request and the response. These fields include the call ID field, the command sequence number, the to field, the from field, and the tag (if present). That's correct — the to and from fields are identical in both directions. While that's unusual, it's not unheard of, as that method is used in High-Level Data Link Control. This aids in problem resolution when you're using your protocol analyzer to troubleshoot network anomalies.

The invite request asks a callee to join a conference call or establish a two-party call. The invite includes a session description, which enumerates media types and formats. If the callee agrees, the caller sends an acknowledgement and returns a description listing the media it wishes to use.

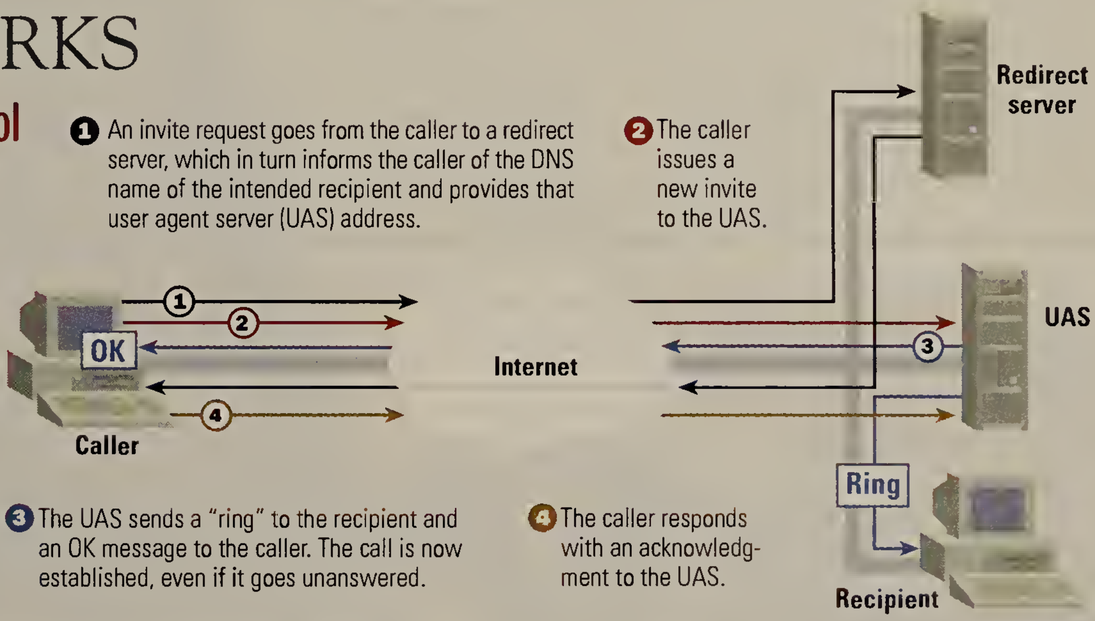
To oversimplify, the IETF created SIP and its brethren protocols because of a belief that H.323 would not scale well. There's no question that H.323 is way in front of SIP at this point in the race. It will be interesting to see what it looks like at the finish line.

Young is Radcom Academy Manager at Radcom, an internetwork test equipment company in Mahwah, N.J. He can be reached at younglarry@radcomusa.com.

HOW IT WORKS

Session Initialization Protocol makes the IP call

SIP is a signaling protocol for creating, changing and terminating call sessions, including Internet telephone calls and multimedia conferences. SIP is one of a number of protocols being groomed to replace parts of the H.323 protocol.



❶ An invite request goes from the caller to a redirect server, which in turn informs the caller of the DNS name of the intended recipient and provides that user agent server (UAS) address.

❷ The caller issues a new invite to the UAS.

❸ The UAS sends a "ring" to the recipient and an OK message to the caller. The call is now established, even if it goes unanswered.

❹ The caller responds with an acknowledgment to the UAS.

Ask Dr. Intranet

By Steve Blass

If you choose a name for your company's intranet, how is that name translated into and pointed toward the IP address of the intranet Web server?
Via the Internet

IP address-to-host name translation works the same way in an intranet as it does in the Internet. You can place host files on each machine in the network, or you can install and configure at least one Domain Name System (DNS) server in your intranet. You can either use a dedicated machine or install the service on an existing server.

The installation details will vary depending on whether you are using a Windows-based server or a Unix server, and on the particular DNS software you install.

If you use Dynamic Host Configuration Protocol (DHCP) to configure IP addresses on your workstations, you can include the DNS server's IP address in the information provided to the workstation by the DHCP server. If you prefer, you can configure the DNS server address directly on each workstation.

You can find pointers to freely available DNS software at www.dns.net/dnsrd/servers.html.

The home site for the Berkeley Internet Domain (BIND) source code distribution is www.isc.org/products/BIND. There you can find pointers to a wealth of information about DNS and Internet routing.

Blass is a network architect at Sprint Paranet in Houston. You can reach him at dr.intranet@paranet.com.

Gearhead — inside the network machine . **Mark Gibbs**

ENTOMOLOGICAL NOTES FOR OUTLOOK

Last week Gearhead moaned about a problem with Outlook 2000 crashing with monotonous regularity. Because I was out of the office a few days, the problem took more than a week to solve! And the problem, it turns out, lies with (drum roll please) the Net Folders feature.

This week, Gearhead is going to discuss this particular fault at some length because many of you are migrating to Office 2000 and with it, Outlook 2000.

Like its predecessor, Outlook 2000 is excellent in concept but could do with some serious polishing. One of the more obviously underpolished bits is the rules system that allows you to determine how incoming and outgoing mail is handled (such as, if the message is from the boss, send a note to my pager and pop up a message).

Outlook 2000 rules are not only hard to use when you have more than a dozen defined, but they are also flaky. For example, rules will sometimes stop working and messages will not be processed until you restart — get this — Windows, not just Outlook!

One of Outlook's more interesting features is Net Folders. If you haven't discovered Net Folders, they are a great idea. First introduced with Outlook 98, Net Folders allow you to share the contents of any of your Outlook folders with other Outlook users.

To be able to do this, you need to have the Net Folders add-in installed and enabled. Without going through the whole process of sharing a folder, you finally wind up entering the e-mail address of the person with whom you wish to share data.

If the recipient is using Outlook, he gets a message inviting him to share the folder and (remember we're talking Outlook here) is presented with buttons offering Accept or Decline.

If the recipient accepts, the "sharer" automatically sends a copy of everything in that folder. Depending on the privileges the sharee is assigned, he can read, add or delete items. Non-Outlook users can be assigned Reviewer status, which provides effectively read-only access.

There are a couple of consequences to this: First, Net Folders can generate a serious amount of traffic, particularly when several people have access above Reviewer level. Second, you had better ensure that you make appointments and other items private. Otherwise all subscribers get to see everything you're up to.

Unfortunately, there's no way to have items default to private, so be ready to make mistakes and reveal to the whole world (or at least to folder subscribers) that you're scheduled to attend Hackers Anonymous.

Anyway, the problem: There's a major bug in Net Folders (big surprise). The way you'll find out is when Outlook bombs and brings up an error message saying there was an invalid page fault in fldpub.dll.

This fldpub.dll library drives the Net Folders service, but it appeared to be only one of the pieces of software that was having problems when Gearhead first found the problem. The reason was that Norton CrashGuard successfully restarted Outlook, which in turn caused subsequent problems in other Dynamic Link Libraries, making the problem seem even larger. Go figure.

The cause of the problems with fldpub.dll is apparently not known. The relevant technical articles Gearhead found on Microsoft's Web site (articles Q229962 "OL2000: Troubleshooting Net Folders," Q196109 "OL98: ErrMsg: Illegal Page Fault in Fldpub.dll" and Q196297 "OL98: Troubleshooting Net Folders") are fabulously vague.

And the worst is yet to come: The Outlook 2000 article, Q229962, refers you to the Outlook 98 article, Q196109! In this article, it suggests using a utility called nfclean.exe that can trash your entire Outlook installation as it did when Gearhead tried it.

There appears to be no neat solution to this problem other than removing Net Folders support and doing without it. If you have any thoughts or ideas on this topic, join the Gearhead forum on Network World Fusion (www.nwfusion.com, DocFinder: 5828.

No problems to gb@gibbs.com.

News, tips and tools from our Web site

In the Works

While some organizations support the "ayes have it" theory of standards approval, the Internet Engineering Task Force is not so easy to please, says Chairman Fred Baker. In this week's "In the Works," Baker explains how consensus is reached. "We seek consensus, in which those who disagree are willing to live with the outcome and are willing to go home and support it."

DocFinder: 5931

Help Desk

A reader is having problems with his ping and winipcfg commands. He has Windows 95 desktops on a Novell 4.1 network with a firewall. When he tries to use ping or winipcfg, he gets Error Code 10045. Help Desk Editor Ron Nutter says these are Windows socket errors. Find out what Nutter recommends, and jump in with suggestions.

DocFinder: 5932

Crash 'n' burn

Last week, Gearhead columnist Mark Gibbs ran into problems that seemed to stem from Outlook 2000's apparent inclination to crash. Coupled with Windows 98, the new Office suite seems to have an endurance problem, and Gearhead is looking for answers. Some readers have suggested that it could be a gdi.exe issue. "It took me an entire day to determine what was causing the gdi errors. However, it took me another day to figure out how to keep some patches from trashing others.... What a mess!" a reader says. He suggests using the Microsoft Update Information Tool to keep track of the various fixes available. What do you think?

DocFinder: 5828

VPN wizard

Ever wonder what the right virtual private network (VPN) combo is for you? RedCreek, which is rolling out a new Ravlin product this week (see story, page 17), features a tool on its Web site to help you. The VPN Configurator guides you through a series of questions about your net, then makes suggestions about which products would be best for you. Test-drive the wizard, and let us know what you think.

DocFinder: 5929

Bye-bye ATM in LANs?

In a recent feature, Net-Reference founder Dave Passmore recommended pulling the plug on ATM in the LAN. Passmore argued that ATM to the desktop never took off and that LAN Emulation (LANE) was too complex. In addition, Multi-Protocol over ATM routing did not catch on with network managers who relied on traditional routing. Some readers agreed with Passmore's recommendations: "ATM has died out in LAN/campus, but should be considered in its rightful place — provided by telcos/ISPs for high-bandwidth WAN connections and WAN backbones," one reader says. But another reader advocates taking the nail out of ATM's LAN coffin: "ATM has proven itself to be reliable. LANE requires detailed knowledge but is effective in providing an organizational basis to IP subnetting, traffic management and traffic segmentation." Jump into our forum with your thoughts.

DocFinder: 5621

Help Desk

Ron Nutter is standing by to answer your networking questions. Read his column every week on Fusion. DocFinder: 2450

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—*NetworkWorld*, September 1999

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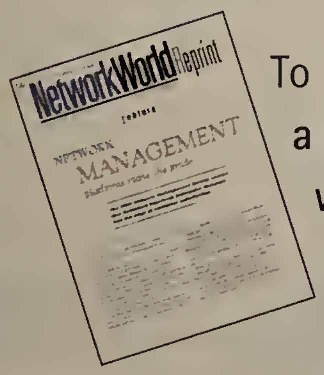

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Editorial

Cast your vote for the best in B2B e-commerce

With all the jingle-jangle of Christmas around us, who needs any reminder that e-commerce is alive and well? I can't say for sure whether the motto "Click until you drop" will ever replace the traditional "Shop until you drop," but the seasonal gift orders are a-flyin' across the Web.

While talking about Christmas e-shopping is a popular pastime these days, our cultural immersion in e-commerce doesn't stop at the retail shops. In fact, it barely starts there. Some of the most valuable — and viable — sites aren't meant for popular consumption. These are the e-commerce sites through which corporate buyers and sellers conduct their business.

Business-to-business e-commerce sites are about as rampant as their consumer-oriented counterparts. And, just like consumer sites, some are better than others. To really shine, a business-to-business e-commerce site must have evolved out of a thoughtful business plan and be built upon a solid technology architecture. Such sites go beyond the norm, providing innovative features and functions that truly speak to customer needs. They handle transactions, of course, and also much more.

Take milpro.com, an e-commerce site for small metalworking shops. Milpro.com is a sophisticated yet friendly site that opens a new customer base and revenue opportunity for metalworking products maker Milacron. Its January 1999 launch was the culmination of more than a year's worth of customer and market research, business planning and site development. And for that, we bestowed upon Milacron our first-ever E-comm Innovator of the Year Award (*NW,* Feb. 22, page 55).

Now we're looking for candidates for our second-annual E-comm Innovator of the Year Award. Think your business-to-business e-commerce site qualifies? If so, we'd love to hear about it and to share your experiences with other *Network World* readers in our Electronic Commerce Issue, a special Signature Series issue coming in February.

Head to Network World Fusion for a nomination form, or e-mail your suggestion to Signature Series Senior Editor Julie Bort at jbort@nww.com. We look forward to seeing e-commerce at its best. Until then, click away — and happy holidays.

— Beth Schultz
Executive Editor
Signature Series
bschultz@nww.com

Message Queue

WOMEN IN IT

Regarding your article "The critical shortage of women in IT" (Nov. 22, page 53):

I am a 40-year-old female systems engineer. I am an MCSE — one of those 11% female certified professionals. I can certainly, after what I have been through in this field in the past 10 to 15 years, vouch for the accuracy of this article.

As a female, I am constantly ignored, passed over and second-guessed. Credit for my work usually goes to the males in my group or other males in the company. I am excluded from most technical conversations and am not qualified — by lack of a certain body part — to belong to the "good ol' boys' network" — and you had better believe it still exists.

It really angers me that the U.S. will take in immigrants, pay for their green cards, visas, family relocation and/or hire new college graduates and train them — seemingly anything to avoid hiring qualified women in the IT industry. It is almost the year 2000, and these idiots are shooting themselves and the rest of us in the foot because of their prejudiced attitudes.

I make, on average, about $8,000 less per year than my less-qualified and less-experienced male counterparts, and I am constantly fighting to keep from being wedged into database administration or administrative positions.

I would like to see an article like this one at least once a week — until this issue no longer exists.

D. Corum
Durham, N.C.

Your article "The critical shortage of women in IT" was utter nonsense. If there is a shortage of people for IT careers, then we need to take steps to attract *people* (notice I didn't get gender specific here) to the business. I agree that salaries should be equal for both genders and girls shouldn't be "discouraged" from entering this field, but if IT positions by their nature tend to attract more men than women, so what? So does being a firefighter. The nature of certain careers has in many cases tended to attract a narrowed scope of characteristics. IT may be one of them, but that's just the way it is. Should we change the nature of the career to suit the country's demographic profile?

Of the four women quoted at the top of page 53, only Kitty Didion of the Association for Women in Science makes sense, but her comment that "girls need to be told that . . . the more math you take, the higher your salary" is relevant to girls *and* boys. And if Kelly Carnes of the Commerce Department thinks we're "wasting the talent from half our population," what is it being wasted on? I guess a career that is less important than IT.

Tim Easley
Pico Rivera, Calif.

UNCLOUDED VIEW OF VOIP

Finally! An insightful and objective article on voice over IP ("VoIP reality check," Nov. 29, page 55). Author Susan Breidenbach must have walked in with an open mind on this topic because she catches all of the points that are either smoothed over by the IP crowd or blown out of proportion by naysayers. Refreshing.

Greg Roberts
Principal
Century VII
Tullahoma, Tenn.

IT'S YOUR DIME

Regarding your article "User groups criticize caller-paid wireless" (Nov. 15, page 33): I would hope that wireless carriers will let subscribers activate and deactivate at will the calling-party-pays option.

Forwarding one's home phone number to one's cell phone is a nice security feature, especially when the voice quality of the digital cell phone is indistinguishable from the land line.

Craig Paul
Technical support programmer/analyst IV
University of Kansas Computer Center
Lawrence, Kan.

Send letters to nwnews@nww.com or John Dix, editor in chief, Network World, *161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.*

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MORE VIEWS

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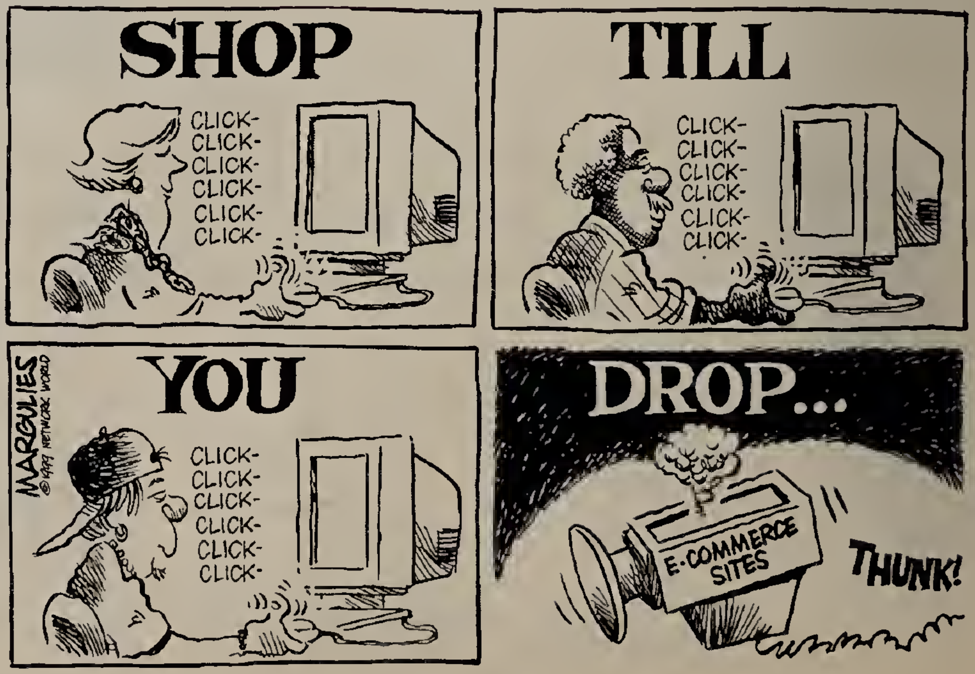

Intranet Adviser . Daniel Blum

GET READY FOR THE YEAR OF THE EXTRANET

On Jan. 1, when the lights come on, the year of the extranet will begin. It's time to consider a New Year's resolution to build the next-generation infrastructure that will make your company an e-business player.

The stakes are high. A flood of funding is pouring into business-to-business commerce. This has resulted in a profusion of e-business products — many of them good, but often lacking overall manageability or integration.

At the same time, I've seen users in company after company ask IS to interconnect disparate business partners using a plethora of single-point, application-specific products. But most internal systems are not secure enough to be externally interconnected while still remaining part of the intranet.

External access infrastructures are themselves undergoing changes as firewalls increasingly show lack of granularity in managing the growing number of personalized e-business relationships. A new policy-based, directory-enabled infrastructure must emerge to govern external access.

In the short term, this infrastructure can be provided by extranet access management systems, such as Netegrity's SiteMinder or EnCommerce's GetAccess. In the long term, extranets must give way to virtual enterprise networks capable of managing access to enterprise-owned resources, information and applications.

No one dominates the emerging extranet infrastructure. Netscape, with good products and considerable market and mind share, needs to prove it can survive and flourish after the Sun/AOL acquisition. Microsoft has stepped forward with Biztalk, but this attempt to dominate XML formats comes in advance of a strong extranet architecture, products or market share.

Novell, with Border Manager and its Caching Server, has some good products, and its directory-enabled pitch promotes the right architecture. But we rarely find Novell Directory Services running outside the network operating system. On the other hand, IBM has been effective, first creating a comprehensive policy-based e-business security framework and announcing an array of partnerships, and then purchasing Dascom, whose extranet access management system is the centerpiece of IBM's SecureWay line.

During the year of the extranet, enterprise IS and business users must agree on security policies, partner interconnection guidelines and back-end application integration strategies for e-business. The fragmentation of the market may force you to adopt tactical solutions but could add a strategic element to your project. Use part of your funding to develop internal architectures and standards for general purpose directory, authentication and authorization services that cross intranet and extranet boundaries. Then use the general purpose infrastructure to avoid reinventing application-specific point solutions that will be expensive to deploy and manage down the road.

Blum is senior vice president and principal consultant with The Burton Group, an IT advisory service. He can be reached at dblum@tbg.com.

On Security . Winn Schwartau

SECURITY AND ASPs: OUT OF SIGHT, NOT OUT OF MIND

The other day, I listened to Floyd Rimcrust, chief information officer of Big Financial Deals (BFD), tell his staff, "Our security worries are now over!"

Rimcrust boldly proclaimed that BFD was going to migrate its key services to an application service provider (ASP), thus allowing the company to concentrate on its core business "and not this piddling security interference." Rimcrust explained that ASPs are revolutionizing the way business is done and that outsourcing BFD's application hosting would save the company a ton of money — not to mention that all of BFD's security woes would be relegated to a historical footnote.

Then Rimcrust turned to me. "So what do you think? You do agree, don't you?" he challenged.

In a desperate balance to maintain both brutal honesty and a client base, I said: "I've never heard anything so incomprehensibly ridiculous. No offense."

Security concerns do not disappear from your radar screen merely because a third party is taking over a piece of your infrastructure. In fact, quite the opposite is true.

Security and ASPs: let me count the whys. Your desktops will connect via middleware to the ASP where your applications and data are housed. You will likely connect over the Internet. Here are a few of the security implications:

- **Authentication.** You want to make absolutely sure that desktop and remote users are positively identified. Forget this password garbage as a primary means of user ID. You could choose to use one-time passwords and/or token generators, such as SecurID. Or, you extend your enterprise with public key infrastructure (PKI) and appropriate certificate authorities of whatever flavor you prefer. Your ASP should be able to tie into your PKI environment with minimal hassle.
- **Encryption.** Your corporate data is now floating up and down the Internet to thousands of your employees. And it's naked. Do you really want that? Of course not. Cryptography is the answer here and can be implemented as part of your PKI, which ideally will tie into your ASP. In Web-centric views, Secure Sockets Layer is a reasonably simple approach; however, the location of the middleware component is critical, especially when using the Internet as a transport medium.
- **Access.** In legacy systems, access control mechanisms mediate who can read/write data. Your new ASP and your corporate security group need to ensure that your policy is enforced across your extended enterprise. You should be able to add, delete and modify user and group rights with ease.
- **Alternative access.** How many back doors to your ASP (and your data) are in place for maintenance, remote administration or other access? You need to examine this and understand the implications just as you would if the applications (and data) were still housed on site.
- **Sharing.** The physical and logical connections of the ASP's backbone can have an impact upon your security, too. How dedicated are the ASP's "dedicated" circuits, backbones, servers and connectivity for your organization? How much sharing occurs within the ASP's infrastructure? Better to know now.
- **ASP OS security.** How does the ASP secure the operating systems on top of which your applications will function? Does the ASP use a trusted operating system? In NT clusters, how does the ASP ensure that the latest and greatest service packs are installed? How is the security extended through the middleware to you?
- **Out of sight, not out of mind.** Firewalls, gateways and other isolation mechanisms are still necessary. Keep in mind that your intrinsic business functions and security needs haven't changed just because the systems are out of sight.
- **Redundancy.** Backup procedures do not go away just because you outsource your applications. Service contracts should be clear about standard protection mechanisms. IP communications redundancy becomes more critical as you rely upon the Internet for 100% operation-high status. Make sure you have both logical and physical redundancy; remember that a few blocks from your office, a number of lower-bandwidth cables often merge into a single high-bandwidth cable.

No, Mr. Rimcrust, your security problems do not go away just because you write a check every month to a third-party supplier. If you use an ASP, you should concentrate on security even more because you are extending your enterprise, broadening its perimeter, including the Internet as part of your networks and adding an entirely new infrastructure to your existing one. Make sure your ASP takes your security as seriously as you do — or more so. Your business depends on it.

Schwartau is president of Interpact, founder of InfoWar.com and author of CyberShock, *to be published next month. He can be reached at winns@gte.net.*

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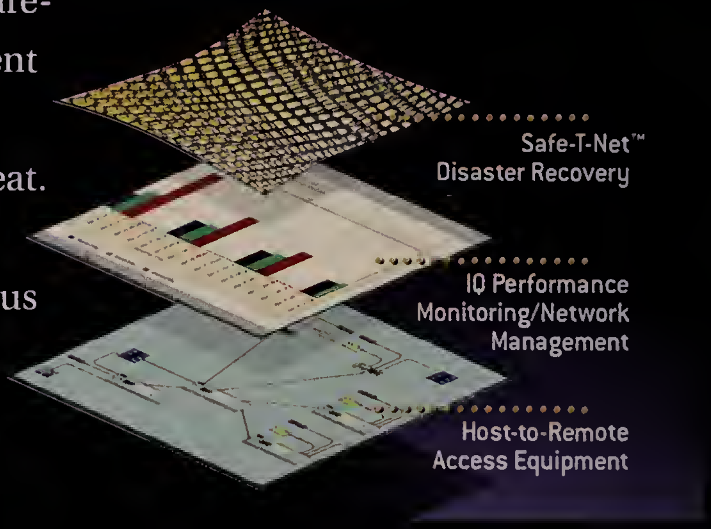

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FACE-OFF

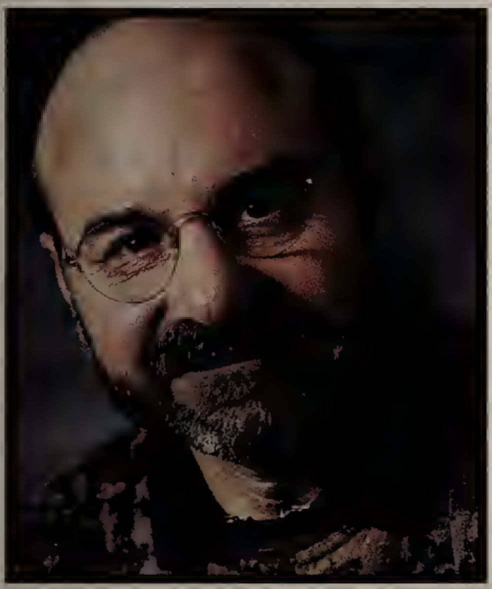
Is unified messaging the cure for message overload?

The technology's potential for saving time and money may not live up to its hype.

YES BY VINNIE DESCHAMPS

In today's fast-paced business environment, users need to be able to access and respond to messages quickly. Unified messaging saves time and money, and increases productivity by storing all voice mail, fax and e-mail messages in a single mailbox. Users can then seamlessly access, manage and respond to messages using a computer or telephone, regardless of the media in which the messages were created.

Faced with the challenge of accomplishing more work in less time (and with fewer resources), knowledge workers in particular are primed for a product that will allow them to manage the ever-growing flow of information they receive. In fact, a recent study published in *The Wall Street Journal* showed that on average, U.S. employees now handle more than 200 incoming and outgoing messages per day.



When a technology enables businesses to save hard dollars — and contributes to a dramatic rise in employee productivity — it's not a matter of if it will catch on, but rather when it will be adopted.

A study conducted last December by The Radicati Group, an independent research firm in Palo Alto, found that organizations recovered their investments in unified messaging products in less than four months. In addition, unified messaging slashed ongoing IT support and administrative costs by 70%. At the same time, these organizations realized approximately 30 minutes of daily productivity gain per user when compared to environments with nonunified voice, e-mail and fax messaging systems.

This study surveyed a broad cross-section of U.S. and international firms from a variety of industries that were using Lucent's Unified Messenger for Microsoft Exchange. The total cost of ownership was measured in terms of acquisition, installation, support and training costs, as well as support savings and productivity gains.

The study credited this specific unified messaging architecture with helping organizations of all sizes reduce costs through the use of a single directory, single message store, single point of administration and single messaging network infrastructure. As a direct consequence, annual administrative and support costs dropped from an average of $708 per user in their previous environments to $204 per user in the new unified messaging environment.

Cost savings aside, unified messaging is successful because it minimizes the number of interfaces a user must learn and navigate to manage messages. No longer do users have to deal exclusively with the telephone for voice mail, the computer for e-mail and the fax machine for imaging. They are free to focus on what to do, not how to do it.

Deschamps is general manager of unified messaging at Lucent. He can be reached at (408) 324-4495 or vinnied@lucent.com.

NO BY ROGER GREENE

Unified messaging is no panacea. Trying to solve a messaging overload problem by making it easier for people to send and receive messages is like trying to solve traffic problems by building more roads. When cities build more roads, more people use them and they quickly get just as congested as before. With unified messaging, instead of people spending less time managing their messages, everybody will end up sending even more messages and the ultimate problem — not enough time to read and respond to all these messages — will get worse.

Unified messaging is overhyped and poorly understood. High expectations were set early on, and these expectations have not been met. Unified messaging products are complicated to develop, encompass a range of technologies from different industries, and require acceptance from skeptical customers who are used to buying separate products for each of their messaging needs.

Unified messaging will be expensive to buy, install and maintain. Training and significant mind-share from senior management will be required. The more options unified messaging has, the more time it will take to train users, resulting in a slower adoption rate. Compare that to continuing with tried-and-true messaging, and many customers will wait it out until the technology matures.

Rather than tackling all-inclusive messaging, unified messaging vendors should focus on the messaging types that would benefit most from integration — voice mail and e-mail. Tying the two together so you can access e-mail from a telephone and voice mail from your e-mail inbox would be a productivity gain. Paging and faxing can be added later.

But is all this just science fiction? Until now it has been, fueled by the hype of unified messaging vendors and the media. Challenges remain. One is that vendors tend to have e-mail or voice expertise, but not both, so strategic relationships among vendors are necessary. Because they lack the necessary sales and support channels, mail vendors that acquire voice technology and try to produce a system won't stand a chance. Voice vendors can better integrate e-mail and use their sales and support infrastructures to promote the technology.

Here's another obstacle: The voice market is slow to adapt to new technologies. Getting a company to replace its telephone system is a major challenge.

Unified messaging is new and exciting because it has promised to be a messaging cure-all. That kind of hype killed artificial intelligence when the technology couldn't deliver, and it would be a shame to see that happen here. Without the right early focus from the right type of vendors, unified messaging will languish as another promising technology that never happened.

Greene is president and founder of Ipswitch, an Internet applications software vendor in Lexington, Mass. He can be reached at (781) 676-5704 or roger@ipswitch.com.

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WHAT DO YOU THINK?

Is unified messaging the cure for message overload? Continue the debate online with Lucent's Vinnie Deschamps and Ipswitch's Roger Greene.

DocFinder 5925 find it online

Secrets of the t

Here's a winning strategy for getting the best telecom rates.

BY BRETT MACHTIG

Few people have the desire to sort through reams of tariff data, but knowing just a bit about how the arcane tariff filing system works can save your company big bucks in telecom costs.

A tariff is a document that carriers file with the Federal Communications Commission or a state public utility commission detailing the services, equipment, prices and terms it offers. Making the information public helps ensure that carriers offer the same rates and conditions to all customers. At least, that's the way the tariff filing system is supposed to work.

The reality is much different. Carriers have devised ways to strike unique deals that only apply to one customer. That's why there are an estimated 20,000 tariffs on file, more than half of which are still active. Some deals are much better than others: For a company that spends $12 million per year on telecom services, prices can vary as much as 40% with the same carrier.

The game begins when you hire an outside consulting firm to benchmark the competitiveness of AT&T's pricing for a $4 million voice and data contract. The results show that the contract prices are "good" in comparison to your firm's peers. All is well until you hire a telecom negotiating firm to get the carrier to lower its rates 25%, saving your company $1 million. You wonder how you could have been overcharged by $1 million yet still have your pricing considered "good" by a benchmarking firm.

Where did you go wrong?

When you got the $4 million contract, you probably did the best you could without dedicating your life to telecom negotiations and solving the mysteries of tariff filings. But that's like playing basketball one-on-one with Michael Jordan and expecting to win. Carriers crank out thousands of contracts per year.

The carriers word the tariffs so that very few companies — if any — qualify for the same rates given to another customer. If your company uses the same amount of telecom services or less, you have 30 days to request the same deal. The disadvantage is that many of the key terms and conditions are not outlined in the filed tariff, so it isn't clear what you're getting.

Understanding tariff filings is key to improving your company's deal. The way to get a better telecom pricing is to help the carrier cloak your tariff so other companies cannot take advantage of it.

The game plan

Here are some of the games AT&T, MCI WorldCom, Sprint and other carriers play to hide the best rates and protect their profit margin.

- **Contract tariff number.** The carrier hides the name of the customer and assigns each tariff an anonymous number. Carriers can file multiple tariffs for a customer, effectively hiding credits and letting the customer pick the best rates from several tariffs that also contain poor rates.
- **Revision number and date.** The carrier may hide the true terms of the tariff by overwriting the information on original pages with revised pages. Other key information can also disappear as one page gets overwritten.
- **Contract term.** One particular tariff may actually be a 36-month deal that was renegotiated and refiled year after year in order to look like a longer agreement. For example, a three-year deal could appear to be a nine-year deal that has poor pricing in years one through six, which have already passed for the intended customer. Competitive pricing would then appear for years seven through nine. The carrier has effectively poisoned the deal for other customers.
- **Gross monthly usage charges.** AT&T's tariffs are almost always stated as gross pricing before discounts and credits. Because these discounts are often in excess of 50%, the customer's tariff appears much larger at first glance. Sprint's and MCI WorldCom's commitments are almost always net unless specified up front. The advantage of gross is that as telecom prices decline, most carriers still keep raising their base rates. It's possible for a contract priced on net discounted rates to have a minimum annual commitment (MAC) shortfall because of subsequent industrywide price declines. A MAC is the minimum amount of dollars a customer agrees to spend with a carrier.
- **Shortfall charge.** Almost all tariff contracts have a shortfall penalty. In many cases, this penalty is 100% of the amount by which a customer fails to satisfy the MAC in any year of the tariff's term. Because most large companies receive 50% discounts, the penalty ends up being twice the amount the customer would have paid for the service, says Hank Levine, a partner of the Levine, Blaszak, Block and Boothby, a Washington, D.C., law firm. Also be aware that any rate adjustments you get during the middle of a contract could cause a shortfall, says Mike Bruesewitz, a tariff analyst with Telwares, a telecom procurement and negotiation services firm in Destin, Fla.
- **Capped volume-sensitive discount tables.** The carriers create volume-sensitive discount tables that limit discounts for usage above a certain amount. If companies exceed that volume, they must pay full tariff rates. Carriers claim they cap the discount at certain volume levels to discourage reselling, but the real reason they do it is to minimize your leverage.
- **Monitoring conditions.** The tariff's terms and conditions defining your usage patterns are meant to limit your flexibility, secure the carrier's margin and poison the deal for potential subscribers. AT&T may say, for example, that 80% of a customer's traffic must be interstate, or 90% must originate from dedicated facilities. If you can't fit the traffic mold, you can't buy under this tariff. Noncompliance with these conditions can create a substantial penalty based on your MAC.
- **Uncertain events.** "One practice of deception carriers use to offer pricing concessions is 'uncertain or future event' pricing," says Larry York, former pricing

ariff game

specialist for MCI WorldCom. In other words, the pricing in the contract is contingent upon an event that may or may not occur. For example, a carrier may offer an additional 5% discount if the customer has $100,000 per month of international usage. Only the customer and the carrier know for sure if the event in fact occurs.

- **Exclusivity clause.** Some carriers get customers with an exclusivity clause that basically limits your flexibility and volume leverage. For example, the carrier might stipulate that at least 80% — and sometimes even 100% — of your telecom expenses have to go to the carrier as long as the services aren't already under contract. This tactic locks in new revenue for the carrier. "Sprint in particular uses this clause in an insidious way via reference to the term 'preferred telecom provider,'" says Pete Wilson, president of Telwares. "The unsuspecting customer later finds out that this phrase commits him to 98% exclusivity with Sprint or else his company loses all discounts."
- **Rate hikes.** Base rates for software-defined network services have been steadily increasing an average of 5% to 10% per year. A carrier may give you good initial pricing, only to increase the rates later. The only way to prevent your rates from going up is to get stabilization language in the contract and tariff.
- **Intrastate rates.** The carriers all file intrastate rates with public utility commissions in individual states. By reading a tariff, all you can determine is the applicable intrastate discount, not the actual rates. The intrastate rates can increase without changing your tariff.

DAVID BUTLER

These games make it difficult for you to compare tariffs and determine whether your telecom deal is market competitive. However, you can hold your own in a negotiating match with carriers by maintaining leverage throughout the life of the contract. The trick is to know which terms to include in the contract and which conditions to avoid.

Key contract terms to embrace

- **Rate review clause.** Make sure you have the ability to lower your telecom rates if the actual market prices change. The best clauses compare your rates to all providers and not just those of your current carrier.
- **Rate stabilization clause.** This clause prevents your rates from increasing during the contract period. Carriers regularly increase their base rates even though after-discount rates have dropped considerably over the last decade.
- **Service-level agreement penalties.** If the carrier has problems delivering service, it must pay you an agreed-upon amount. This fiscal reality gives your carrier extra incentive to worry about service levels.

Other key clauses that should be in your contract include technology migration, carrier merger protection and material failure. Technology migration clauses let you move traffic from one technology to another without carrier penalties. Carrier merger protection safeguards you from problems caused by a merger, such as the MCI WorldCom deal. And the material failure clause gives the ability to terminate a contract if the carrier doesn't perform to a set standard.

Key contract terms to avoid

- **Exclusivity clause.** Don't agree to any exclusivity provisions or you give up future leverage.
- **MAC ratchets.** Carriers like to have the MAC as high as possible. They may compare your company's usage to a percentage of last year's usage or the previous MAC, whichever is higher. Again, all this does is limit your company's future leverage and carry the risk of shortfall because your commitment can go up but not down.
- **Capped volume-sensitive discount tables.** Corporate America is in an acquisition mania, so it becomes easy to have unexpected and sizable increases to your usage. Make sure acquisitions or rapid growth do not cause your company's rates to go up to full tariff pre-discount pricing on the excess usage.
- **High MACs.** Many carriers try to have you commit to volumes too close to your current usage. This creates a high risk of future penalties.

Be in the know

Telecom carriers have been able to maintain such widely varying prices because few understand the telecom game well enough to defend against their ever-changing tactics. Here are some places to go for help:

- **Benchmarking firms.** Hire one of these companies, but understand clearly the limitations of the results they produce. Two of the top benchmarking firms are Gartner Group and META Group.
- **Shop around.** If the carrier doesn't believe it can win your business or your current carrier doesn't believe it could lose your business, the company won't produce an aggressive bid.
- **Use a consultant.** Have someone review your contract and carrier bids. Some companies charge for this assessment, others don't. Check the consultants' customer references to get a feel for their experience and their ability to improve rates, terms and conditions.

Telwares conducts telecom negotiation and procurement for Fortune 2000 companies. If you work for a large company that needs legal assistance with contract terms and conditions, consider Levine, Blaszak, Block & Boothby. Smaller companies should consider Lynx Technologies or Profitline.

Now that you know what carrier tricks to watch for, how to maintain leverage and where to go for help, you're better prepared to win a good telecom contract. Let the games begin.

Machtig works with Telwares, a telecom procurement and negotiation services firm in Destin, Fla. He can be

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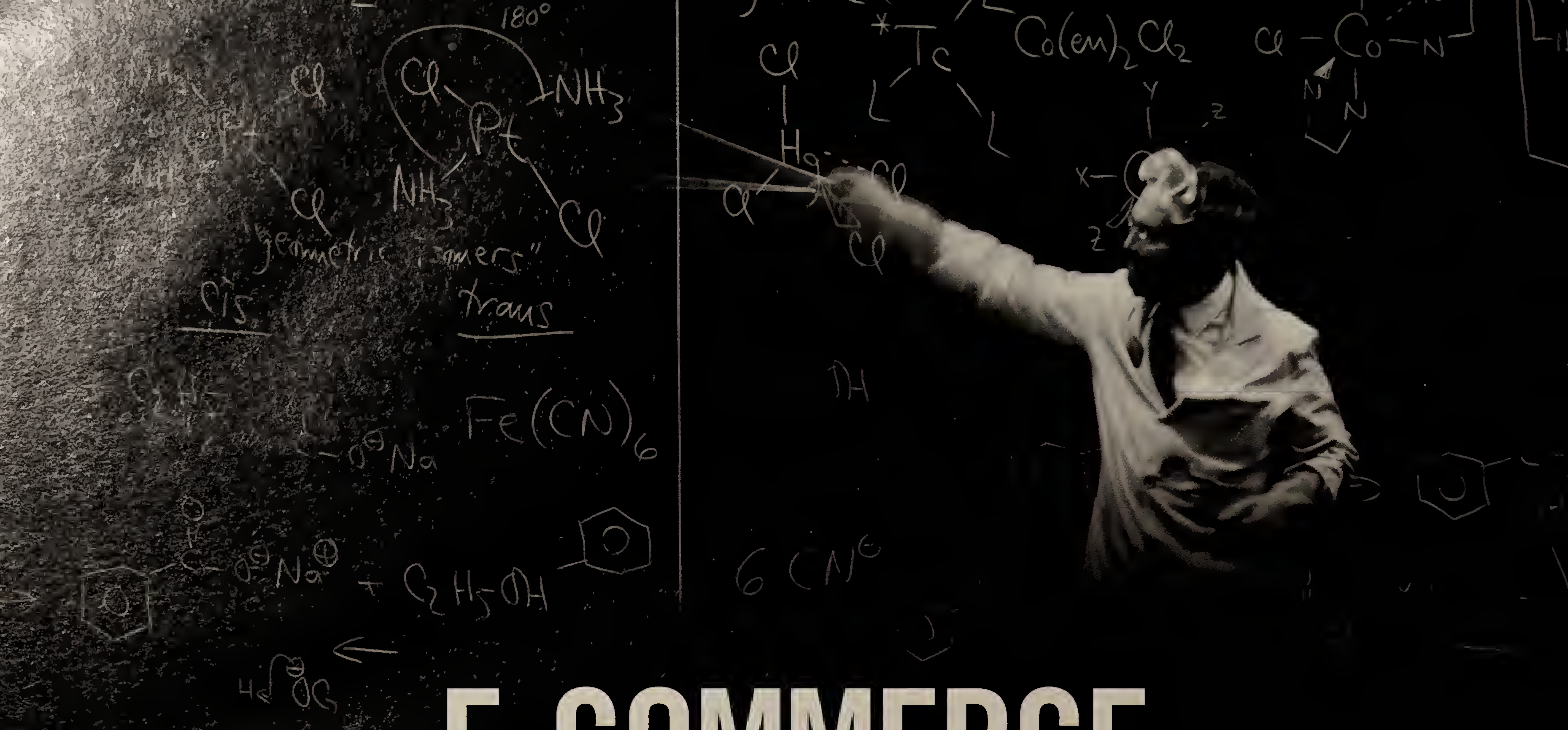

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Securing the last mile

Testing shows a level playing field for user-to-site VPNs.

BY JOEL SNYDER,
NETWORK WORLD TEST ALLIANCE

Securing that last mile is a frightening prospect.

Client-to-LAN virtual private networks (VPN), which encrypt communications between an individual's laptop or home PC and corporate LANs, break two of the cardinal rules of enterprise network support: Never touch the desktop, and never do anything that requires users to change their computing habits.

The need for security is driving network managers to lock up communications between users and corporate LANs. But how do you create, deploy, support, manage and report on hundreds or thousands of VPN client users?

We tested 11 user-to-site VPN products. Many of the same vendors were represented in our site-to-site VPN review earlier this year (*NW*, May 10, page 86), in which we looked at configuration and performance in a LAN-to-LAN environment. This time we focused on how products handle corporate VPN clients.

Most of the products we tested provided reliable performance and reasonable manageability. In fact, of the 11 products we tested, eight accumulated total scores that lay within a one-point span. TimeStep earned the *Network World* Blue Ribbon Award because its Permit Enterprise 1.2 product serves up the management tools needed for a truly huge deployment.

Setting the VPN client ground rules

An end user's experience with a VPN starts with the software installation. We normally don't evaluate client installation procedures, but because VPN clients are generally installed in the field, we wanted to look at the whole experience. Even this was a little unfair: We tested on freshly installed Windows 95 systems, so we didn't get to experience the full gamut of Windows conflicts and confusion associated with installing software on a well-traveled laptop.

We looked at the ways each product handled setting up authentication information for each VPN client, configured the client software and set up security policies.

One of the difficulties in setting up VPNs is putting security key information on the client. Public-key certificates, which provide the best security, are long and cumbersome. More importantly, the private half of the public key should not pass over the network — it should be created on the client and locked there with a passcode.

No vendor had a magic bullet for dealing with key information. Most of the products we tested used the simpler, less secure, "preshared secret" authentication method, which means each client is given a username and password. Many vendors also supported public-key digital certificates, using standards-based, or their own proprietary, certificate authorities.

> **TimeStep**
> **Permit Enterprise 1.2**
> NetworkWorld Blue Ribbon
> **Despite having its competitors right on its heels, TimeStep earned our Blue Ribbon Award for Permit Enterprise 1.2, which offers the best support for PKI and the strongest management tools for an enterprise deployment.**

TimeStep took the digital certificate and certification authority scheme the most seriously with Permit Enterprise. The company includes a copy of Entrust's certificate authority and an X.500 directory in its enterprise management suite.

With these tools, you're well armed. The combination produces a certificate authority and directory database configuration designed to scale to tens of thousands of users.

Building a full system for creating, managing, securing and revoking digital certificates falls under the rubric of public-key infrastructure (PKI). The term "infrastructure" is chosen carefully because installing a PKI can be as difficult as any other part of your network infrastructure. A proper PKI installation requires that the network and security managers come together to determine a whole suite of policies and procedures for identifying network users. Doing PKI right is a big deal and one the VPN vendors we tested aren't ready to take on just yet — except for TimeStep, whose Permit Enterprise is one product in which support doesn't look like it was an afterthought.

Once we got authentication information out of the way, we examined how policy and configuration information is installed with each product. This is easier than setting up security key information because one policy typically works for an entire group of users.

Here, Data Fellows' F-Secure VPN, Indus River's RiverWorks Enterprise VPN, Intel's VPN Gateway Plus and VPNet's VPNWare stood out. These products all loaded security policy information into the client over the network.

Every other product in our sampling took a more traditional approach. You must build a deployment kit, combining network-specific initialization files with vendor-supplied images. When the kits are distributed, end users who install the VPN client get the corporate policy information at the same time.

But VPN Gateway Plus and VPNware automatically load security policy information onto the client at

ScoreCard

	Client management 20%	Client performance 20%	Security features 15%	User accounting 15%	Administration 15%	Installation and documentation 15%	Total score
Permit Enterprise 1.2 (NetworkWorld Blue Ribbon WINNER)	8	7	8	8	6	7	7.35
RiverWorks Enterprise VPN 1.2	6	8	7	9	7	6	7.15
VPN Concentrator Series 1.2	6	7	7	7	8	8	7.10
VPN Gateway Plus 6.7	8	7	8	7	6	6	7.05
VPN-1 Gateway 1.2	7	7	9	7	6	6	7.00
Security Management Server 4.1	6	7	8	8	7	6	6.95
VPNware 2.51	6	8	5	6	7	7	6.55
clPro System 4.0	6	7	8	6	6	6	6.50
Ravlin 7100 3.3	5	7	7	6	5	7	6.15
F-Secure VPN+ 4.2	5	7	8	6	6	4	6.00
VTCP/Secure 4.2	5	8	5	7	4	4	5.60

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score.**

NetworkWorld REVIEW

VPN software

NetResults

	Pros	Cons
Permit Enterprise 1.2 **TimeStep** (613) 599-3610 www.timestep.com **$25,490** for 1,000 clients	▲ Provides excellent support for large user database ▲ Strong enterprise management tools ▲ Best PKI support	▼ Sum-of-parts approach lacks coherence
VPN-1 Gateway 4.1 **Check Point Software** (650) 628-2000 www.checkpoint.com **$56,000 to $96,000** for 1,000 clients	▲ Integrated firewall simplifies some configurations ▲ Firewall at client is clean	▼ Pure VPN application complicated by Check Point environment
RiverWorks Enterprise VPN 1.2 **Indus River Networks** (978) 266-8100 www.indusriver.com/pro/pro_main.htm **$150,000** for 1,000 clients	▲ Dial-up user orientation solves dual problems of Internet and VPN ▲ Easy installation ▲ Powerful diagnostics	▼ High price ▼ No firewall option for client
VPN Concentrator Series 1.2 **Altiga Networks** (508) 541-7300 www.altiga.com/products/C50.cfm **$5,760** for 1,000 clients	▲ Excellent management utility provides good picture of what is happening on server ▲ Easy to deploy	▼ Accounting weak ▼ Cannot use Internet efficiently while tunneled
LanRover VPN Gateway **Intel** (781) 687-1000 www.shiva.com/remote/vpngate/ **$17,375** for 1,000 clients	▲ Simple installation on client ▲ Client deployment tool helps with large installations ▲ Good client security options	▼ Lacks accounting data for IPSec sessions ▼ No analysis tools
Security Management Server 4.1 **Lucent** (908) 582-8500 www.lucent.com **$9,995 to $13,490**	▲ Very complete management toolkit ▲ Nice multisystem configuration and control	▼ Lucent firewall+VPN gets in the way of some VPN configurations
VPNware 2.51 **VPNet** (408) 445-6600 www.vpnet.com/products/products.htm **$34,050** for 1,000 clients	▲ Client deployment easy ▲ Supports multiple VPN topologies ▲ RADIUS supports configuring client parameters	▼ Java management GUI not stable ▼ No accounting data
clPro System 4.0 **RadGuard** (201) 828-9611 www.radguard.com/clProVPN.html **$45,000**	▲ Management integrated with HP-OpenView for enterprise environments ▲ Offers configuration flexibility	▼ Lacks accounting data
Ravlin 7100 3.30 **RedCreek** (510) 745-3900 www.redcreek.com/products/7100.html **$19,000** for 1,000 clients	▲ Easy to set up ▲ Quick to configure and install	▼ Management does not scale to large numbers of users or servers
F-Secure VPN+ 4.2 **Data Fellows** (408) 938-6700 www.datafellows.com **$48,990** for 1,000 clients (add **$10,000** for server)	▲ Strong Windows network integration	▼ Complex management environment ▼ Requires Windows networking
VCTP/Secure 4.2 **InfoExpress** (650) 947-7880 www.infoexpress.com/prodfr.htm **$70,000** for 1,000 clients (add **$10,000** for server)	▲ Multiplatform client and server support ▲ Client "live" failover	▼ User interface primitive ▼ Difficult to manage

installation time, giving you a one-time chance to define network security policies.

F-Secure VPN and RiverWorks take this feature further, allowing automatic policy updates after the client has completed its initial configuration. The management server sets up software and policy changes for the client. The next time the client connects, it downloads any changes sent. If you're using the full Data Fellows suite, including antivirus and file-encryption tools, the policy manager used with F-Secure VPN coordinates updates, virus signatures and policy information. It's an elegant solution, but it requires a Windows network environment.

Indus River's RiverWorks has a more comprehensive and complex solution to the client policy problem — one that combines Windows-based dial-up networking and VPN authentication into a single control panel sitting on an end user's desktop.

River Pilot, a component of RiverWorks, integrates all corporate ISP dial-up numbers, access codes and policies into the VPN client. The user hits "connect," and the client dials the Internet — based on the local telephone number information — and takes the user all the way from the dial tone to an encrypted VPN connection.

The network manager controls every aspect of the connection, from whether an 800 number is allowed and which ISP is preferred in each city to which end users are dialing in to the corporate network. This policy information, along with a revised list of dial-up numbers, is downloaded to clients whenever they connect.

For certain kinds of large deployments, these features give Indus River a clear advantage. For example, an organization with multiple ISP contracts, occasional branch-office and headquarter dial-ups and an emergency 800 number — all managed from a central site — would find that River Pilot decreases support and ongoing costs at the same time it increases control.

All other vendors we tested treat their encryption software as a network add-on to Windows. They assume that the user has already set up a network connection, either through a LAN or through dial-up networking.

Policy lock-down is another feature that distinguishes some of the products we tested. Once policy and configuration information is loaded, some products, such as Intel's VPN Gateway Plus and Check Point Software's VPN-1 Gateway, let you

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lock it down so the client can't control or change it. In fact, certain products — such as Indus River's RiverWorks, Altiga Networks' VPN Concentrator Series, VPNet's VPNware and Lucent's Security Management Server — work only that way. Others, such as RedCreek's Ravlin 7100 and Data Fellows' F-Secure VPN, let the user be in complete control at all times.

Which security policy approach works best depends upon your environment. Unfortunately, no single product covers the whole market by letting you choose between total control and total freedom on a client-by-client basis.

Client security

Once your client access policies are set, you have to consider how securely wrapped the data you're sending over the wire is. We concentrated on IP Security (IPSec) and Internet Key Exchange (IKE) as IP encryption methods because they are the two prevailing standards. IPSec is the standard suite that describes how information is encrypted and authenticated. IKE describes how tunnels are set up and how security keying information is created and exchanged.

Some vendors, such as RedCreek and Check Point, support IPSec/IKE and their own proprietary (or non-IPSec) encryption. In most cases, these vendors let you select your encryption preference.

In user-site mode, VPNet's VPNWare only supports the Simple Key Management Internet Protocol (SKIP) encryption system. That didn't worry us very much because SKIP is a well-understood standard. InfoExpress only supports a proprietary system in its product, VTCP/ Secure. The company had beta versions of IPSec code available, but not on the platforms we were using to test.

We were also concerned about Indus River, which does not support IKE for key exchange, and Intel, which requires its own proprietary protocols if you want to use its new client deployment tool. But these aren't killer weaknesses.

Layer 2 Tunneling Protocol is not well established in the marketplace — at least not until Windows 2000, which has a built-in L2TP VPN tunneling client, hits the streets next year. Therefore, support for L2TP was not well represented in the products we tested. Altiga's VPN Concentrator Series was the only product to offer an L2TP tunnel.

L2TP is an entirely different strategy for pulling tunnels (not encrypted, by the way) from a central site to an end user. The benefit of L2TP is that an end user can use protocols other than IP (such as IPX) to tunnel to the server. And if an end user is authenticated using the L2TP mechanisms — which are different and complementary to the IPSec authorization tools — the end user can get an IP address assigned in a standard way from the central site network.

Indus River's RiverWorks and VPN Concentrator Series include Point-to-Point Tunneling Protocol, which is useful in Windows 3.1 or Macintosh environments in which IPSec client software is not readily available.

In addition to encryption and tunneling standards, network managers should pay attention to the built-in client-side firewalls available with some of the products we tested. After all, if a client PC has a window into your network, shouldn't it have protection against compromise? Data Fellows' F-Secure VPN, InfoExpress' VTCP/Secure and Check Point's VPN-1 Gateway all have some firewall capabilities in their client and server software. Check Point, in its Secure Client package, includes a stateful firewall, although only with a limited policy set.

A stateful firewall is a variant on a packet-filtering firewall that maintains the state information of connections as they pass through the firewall. This ability allows the software to match flows in both directions. Without stateful analysis of traffic flows, the capabilities of a packet-filtering firewall are restricted in enforcing very strong security by only letting in packets which are part of an approved "connection."

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VTCP/Secure and F-Secure VPN offer a less-secure pure packet filter at the client side.

Tunnel-side firewalls, which add capabilities to the tunnel server to give it a partial or full firewall, come in the box with most of the products we reviewed, although TimeStep's Permit Enterprise, Indus River's RiverWorks, VPNet's VPNware and RedCreek's Ravlin 7100 offered little in this area. If you are looking to deploy one of these vendors' products in a corporate network in which all users are not permitted entry into all departmentalized networks, you should think about using an auxiliary firewall as well.

Firewall capability in the client may be overkill because VPN clients are usually connected via the public Internet. Being able to turn off Internet traffic when the VPN is connected may be sufficient. Altiga's VPN Concentrator Series product strictly adheres to this approach. When the client is connected to the Altiga VPN server, no other Internet traffic is allowed — no packets go from the client directly to the Internet without passing through the tunnel server first. Permit Enterprise, RiverWorks, Ravlin 7100 and RadGuard's cIPro System all allow the end user to select whether to disable Internet traffic when the VPN is active. Intel's VPN Gateway Plus and Check Point's VPN-1 Gateway put this feature under control of the network manager.

How does the user see it?

We were concerned that end users would resist VPN software if it made their Internet experience substantially slower. We ran performance tests on each of the products, testing latency and throughput. With only two exceptions, we found little performance difference among the products we tested.

The two exceptions were products that used compression. With Indus River's RiverWorks and InfoExpress' VTCP/Secure products we saw an overall performance increase of between 5% and 15% when compression was turned on, depending on the kinds of data and size of packets used. In our tests, InfoExpress performed substantially better than any other VPN vendor, although it achieved those numbers using the company's proprietary protocols.

For noncompressing VPN clients — the rest of the vendors in our test sample — the average degradation in network performance was 20%, with traffic running between 16% and 24% slower over the VPN. For normal Web applications, such as browsing and e-mail, this degradation is hardly noticeable. With interactive applications, such as virtual terminals, users may be dissatisfied with the difference in performance because we saw as much as a 60% increase in latency.

Managing thousands of users

While the clients may be secure,

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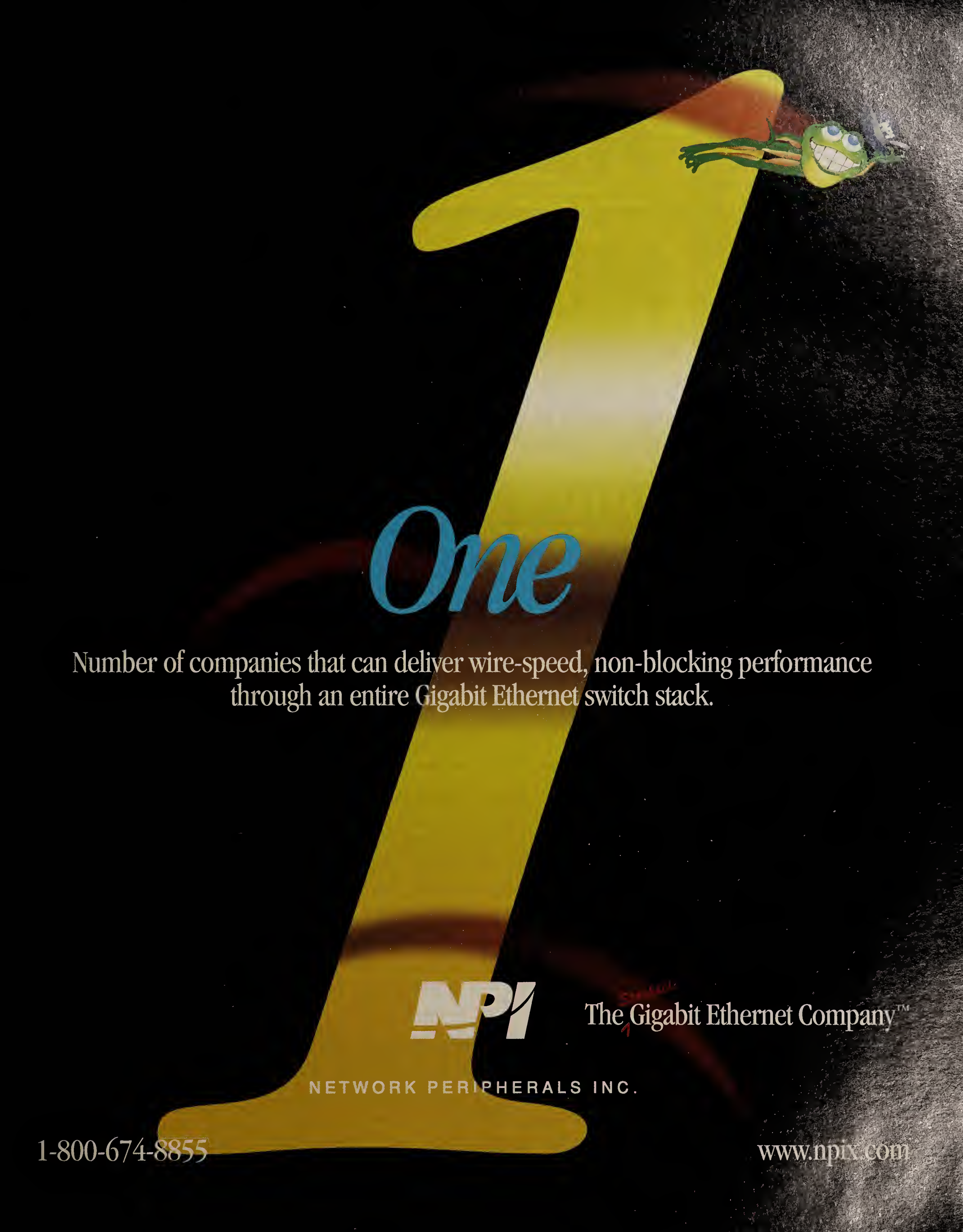
How we did it

We built a test bed that included a single client workstation connected to a tunnel server. At the other end of the tunnel server was a server we used for connectivity and performance testing. The test server was a 500-MHz Alpha system with 256M bytes of memory running Digital Unix. We used the slowest system in our lab, a 200-MHz Pentium PC running Windows 95 OSR2.5, as the client workstation to emulate the performance characteristics of a typical notebook user dialing in to the network.
For each of the products we tested, we looked at installation and configuration on the client workstation, and we tested performance to see how adding virtual private network (VPN) software changed the end user's overall experience. We didn't test interoperability because few enterprises run one vendor's client against another's firewall.

While it would have been nice to test the claims that vendors make regarding the total number of tunnels supported on their products, we thought that the only reliable way to make such a test would be to have hundreds or thousands of workstations dialed in. For that reason, we looked only at the impact that adding VPN encryption would make on the end user's network performance and latency. We used an ISDN connection, limited to a single 64K bit/sec channel, which gave us delay and latency similar to that of a modem while offering a repeatable test environment.

The workstation and server ran our TCP/IP-based latency and throughput test software. The test software measured latency from the client workstation to the test server, using small and large IP packets with compressible data. The throughput test measured unidirectional TCP throughput, which would be typical of an HTTP download of a slightly compressible file, such as a graphic image or executable program.



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you still need to authenticate all those users. All of the VPN products we looked at include per-user authentication. Most of the systems include local authentication, which looks up user information in a database stored on the VPN device or VPN management station, but you should probably also provide a gateway to some external authentication database to avoid creating yet another password for users to forget.

Remote Authentication Dial-In User Service (RADIUS) has become the de facto choice for network-based authentication. There are good RADIUS servers available to pull from a variety of authentication databases, including the NT Security Access Manager database, and a variety of one-time password systems using tokens or smart cards, such as SecurID or Cryptocard.

We tested each server that supported RADIUS against our in-house server. We found excellent interoperability — we were able to make almost every RADIUS-supporting VPN work easily. Check Point's VPN-1 Gateway was the only exception — we got it to work, eventually, but it wasn't quite as easy as the others. Data Fellows' F-Secure VPN and TimeStep's Permit Enterprise don't support RADIUS at this time.

Not in our ranks?

We invited all VPN vendors to submit products for this review. While we did get most of the major vendors to respond and send products to our lab, some of the big players are indeed missing from our testing mix. Cisco declined because its product is still in final beta testing. Xedia also declined, citing a lack of resources. Compatible Systems, Nortel Networks and Network Associates all declined to participate but gave no specific reason for their absence.

However, some of these products are poorly designed. For example, VPN-1 Gateway required us to enter each user into the RADIUS database and its own database. Having to enter users into two databases (and remember to take them out as well) is a bad idea.

VPNet's VPNware and Altiga's VPN Concentrator Series go in the other direction. They not only let you store user and password information in a RADIUS database, but they also let you download per-user configuration information (optionally) from the RADIUS server. You may also like Indus River's RiverWorks RADIUS design, which requires that the RADIUS server return a special flag that enables the user for VPN access.

Once all of your users are accessing the network properly, you'll want to keep track of their comings and goings. We looked at the accounting features of these VPN products and were generally disappointed.

The best choice for accounting in the VPN tunnel servers seems to be RADIUS, which moves the accounting records off the tunnel server into an environment where there are abundant freeware tools to create reports. Lucent's Security Management Server and Altiga's VPN Concentrator Series support RADIUS accounting, while Intel's VPN Gateway provides RADIUS accounting for Shiva Smart Tunnel users only.

Most of the other VPNs have weak accounting and reporting tools. For example, Indus River's RiverWorks lets you see information only for past days — you cannot look at this morning's data. Even worse, reports are filed by day, so there's no easy way to look at usage over a period longer than 24 hours. InfoExpress and Check Point have slightly better capabilities. However, Check Point makes you pay $1,500 to get a log consolidator — a feature we think should have been included in the base product — to produce lousy reports with incomplete data.

However, weak is better than nothing, which is what we got when looking at VPNet's VPNWare, RadGuard's cIPro System and RedCreek's Ravlin. These three products either gave us no accounting data or dropped so much information during the process that the data we were able to collect was useless.

Managing and monitoring the VPN

Though we weren't happy with their accounting tools, the products did better in other management areas. More than half the products were able to page someone or send an e-mail message when something went wrong. The best management and monitoring came in products from Altiga and Lucent. With Altiga's VPN Concentrator Series, every aspect of the tunnel server shows up in the management module. You can even see the speed of the fans in the dual power supplies if that seems interesting to you. Lucent's Security Management Server is even stronger where it really matters. For example, it offers multiple levels of management, letting you specify who can monitor and who can change things. Lucent also includes a baby protocol analyzer in its product, a nice touch.

We also liked the systems that gave us limited command-line management capabilities, including the TimeStep, Intel, RadGuard and VPNet products. You wouldn't want to build an enterprise VPN using a command line, but the ability to connect to a VPN server using a low-tech terminal emulator to change a single parameter or debug an interoperability problem is a nice plus.

Network managers who plan to take a "set it and forget it" stance to managing their VPN services can live with weak management tools such as those from RedCreek and Intel. Although you can see what's going on with these tools, it's a painful process.

InfoExpress' VTCP/Secure is even less management-friendly because it's the only VPN that uses ASCII menus in an MS-DOS window for configuration. With InfoExpress, you have to run a report to see who is logged on, and the only way to kick off a misbehaving user is to restart the entire VPN server.

Astonishingly enough, all of the products we tested worked more-or-less as advertised, with few problems in our basic latency and throughput tests. In general, we saw the most instability in clients that had been running for a long time, whether connected to the VPN or not. This is a difficult area to test; getting repeatable problems in our lab was an arduous exercise.

Several of the products had trouble with very long-lived tunnels (more than 24 hours), although everyone we talked to promised that this should work, would work at the next patch level or would work if we changed our operating system, security parameters or key times in some way. If you plan to have long-lived tunnels, make sure you test them in your environment with your security parameters before buying.

We found more stability problems in the management consoles. For example, the Indus River's RiverWorks graphical user interface blew up on several occasions, and the VPNet VPNWare Web-based Java kit occasionally lost its hold on reality and had to be restarted. We also ran into design problems with some products: InfoExpress' VTCP/Secure, because of its architecture, doesn't support all types of IP protocols, which might cause interoperability failures in some application environments; and Lucent's Security Management firewall-plus-VPN strategy caused some connectivity problems with our FTP server.

So what do I buy?

The products we looked at vary so widely that there is no single top choice. Your best match depends on the size of your VPN, the way you connect to the Internet and more complex questions such as whether you want to use Windows networking remotely and whether you're going to use charge-back accounting.

RedCreek's Ravlin series beat out all contenders for simplicity of installation and operation. Nevertheless, Ravlin would be a disaster if you had thousands of users to connect.

For midsize users, the Altiga VPN Concentrator Series is a great deal. Well priced and with an easy-to-understand management interface, setting up and running Altiga's VPN Concentrator Series was never a challenge. While Lucent and Check Point also scored well in the same areas, their management interfaces were an order of magnitude more complex than Altiga's, without offering a corresponding number of extra features.

For massive deployments, look closely at Indus River's RiverWorks and TimeStep's Permit Enterprise offerings. These companies have thought about what it means to distribute 10,000 or more clients. While we found deficiencies in reporting tools for both, their other strengths make them mandatory evaluation candidates. Similarly, Lucent, VPNet and Intel, which have less experience but strong architectures, should be on the short list of anyone doing a massive rollout.

However, don't let our small/mid-size/large categories stop you from looking at all of the products that fit your needs. We looked at a bunch of winners, and that's good news for any network manager.

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Using your visa card

DARIEN OYGI

While fashioned as a temporary IT staffing measure, the H-1B visa program may also help you bring in long-term employees.

BY DENISE DUBIE

When Martha Daniel needed IT workers with legacy systems skills in the early '90s, she had to look outside of the U.S.

"Most people in the U.S. were busy switching over to client/server at that time," says Daniel, president and CEO of IMRI, an IT consulting firm in Costa Mesa, Calif.

Daniel became familiar with the H-1B visa, a temporary work visa available to foreigners who work in "specialty occupations" that generally require a bachelor's degree or higher. The terms of the visa allow H-1B employees to work in the U.S. for a maximum of six years. After that, the visa holder must either leave the country or obtain another visa, such as a green card.

The H-1B visa program is employer-driven, meaning the company looking to hire a non-U.S. citizen must apply for the visa. The company must establish that the job requires the services of an educated professional; that the candidate's skills and education meet those requirements; and that a labor condition application (LCA) has been certified by the Department of Labor, according to Susan Cohen, a partner of Mintz Levin's immigration law group in Boston.

The LCA must outline the position's requirements, the candidate's qualifications and the pay rate the employee would receive if hired. The pay scale for H-1B workers has to be equal to or more than the standard rate in the U.S., so rumors of companies importing cheap labor are unfounded, Cohen says.

"A company would not choose this involved process if it did not desperately need the talent on staff," she says.

IMRI used a staffing agency to help recruit H-1B workers, but Daniel doesn't recommend this practice.

"A lot of the time, when the employee came to work, he did not have the experience we requested," she says. "We then started interviewing candidates directly."

Other difficulties Daniel encountered with her H-1B employees involved bridging the cultural and language barrier, both of which were manageable with some extra attention to the workers' needs. On the plus side, most of the H-1B workers she encountered were extremely flexible and willing to move anywhere in the country for work. Most Americans aren't so willing to relocate, she says. These days, IMRI no longer needs to seek out foreign workers, preferring instead to focus on training the local work force.

However, the H-1B program is critical to the success of AC Technologies, a Fairfax, Va., software development and network engineering company with seven H-1B workers on staff.

"The H1-B gives us as a small company the ability to get a lot more talent in this job market," says David Lee, program manager at the company.

Moreover, the imported employees have well-rounded IT skills that let them pick up the ball on multiple projects, Lee notes. For example, Peterson Han, a software engineer from Beijing, China, assisted with a large network project with next to no additional training.

AC Technologies is fortunate enough to have a human resources department that knows how to apply for and renew H-1B visas, but Lee acknowledges the cultural and language barriers associated with hiring foreign workers. Managers quickly learned to document their requirements in writing to help staffers overcome occasional verbal communications challenges.

Aside from the low turnover rate and expert skills his H-1B employees offer, Lee says he has learned "an incredible amount about every major culture in the world in the past year." Han adds, "It's nice to get to know different people and all their different stories."

Han is working to obtain a green card, a process that can take up to three years. If you want to make your short-term H-1B workers long-term assets to the company, Mintz Levin's Cohen suggests encouraging employees to start the paperwork soon after they come on board.

Depending on your IT needs and market demand, the H-1B visa can provide a short-term Band-Aid to a staffing crisis. But your firm should be well-versed in the law or hire someone who is to avoid a possible Immigration and Naturalization Service investigation, Cohen adds.

Still, for the most part, if you adhere to the requirements, there is little risk of legal consequences.

"It's an outstanding asset to the IT industry in this country," AC Technologies' Lee says. "It allows us to stay competitive with the world." ◪

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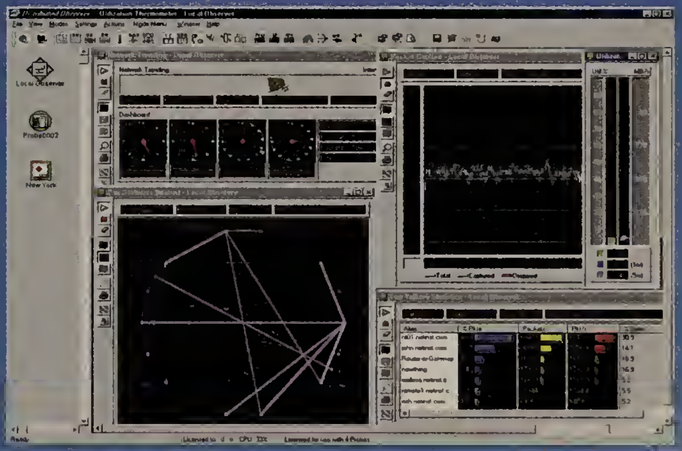

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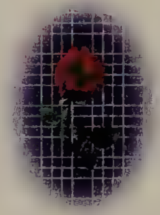

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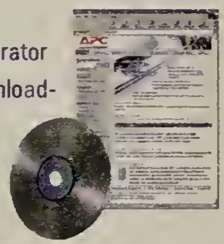

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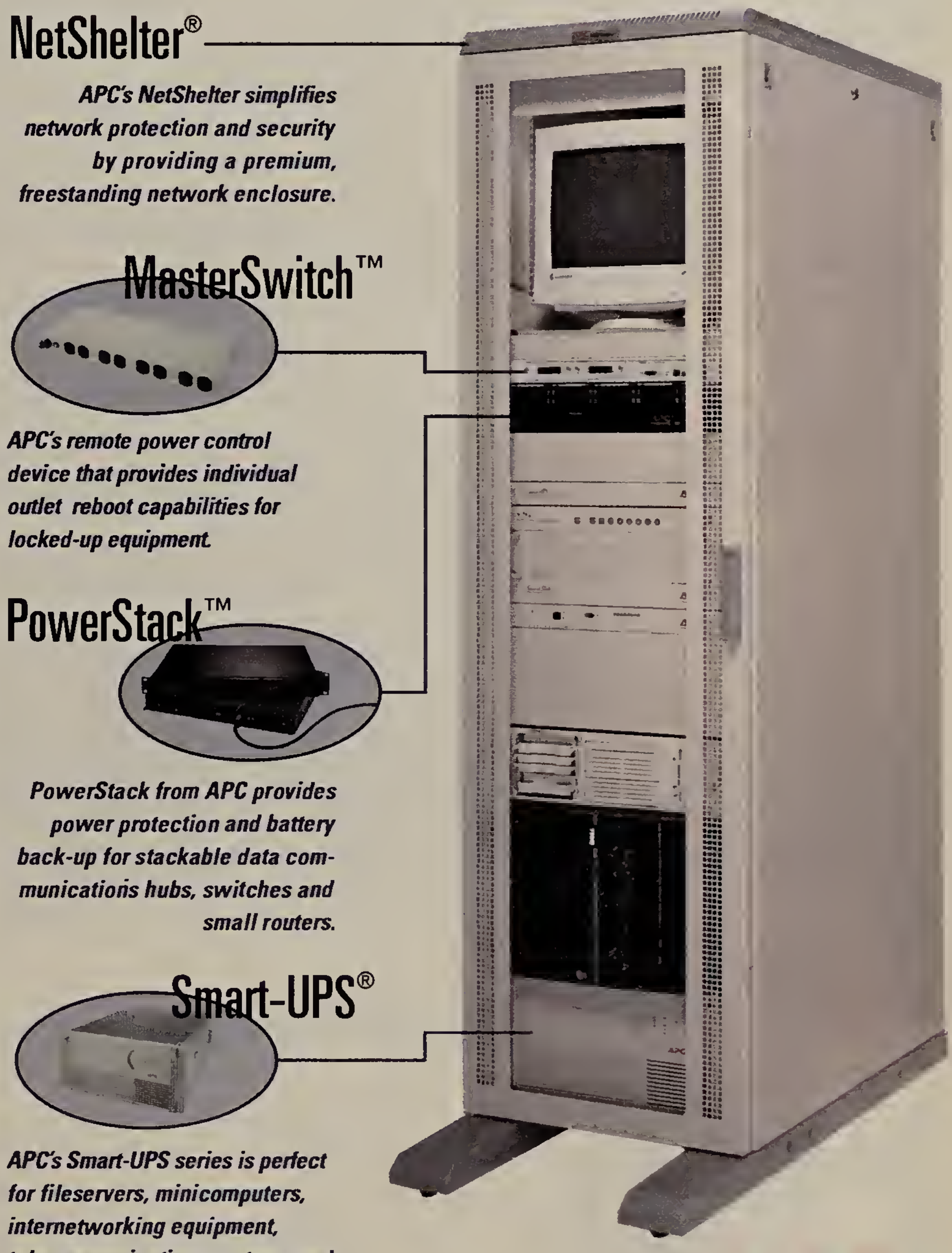

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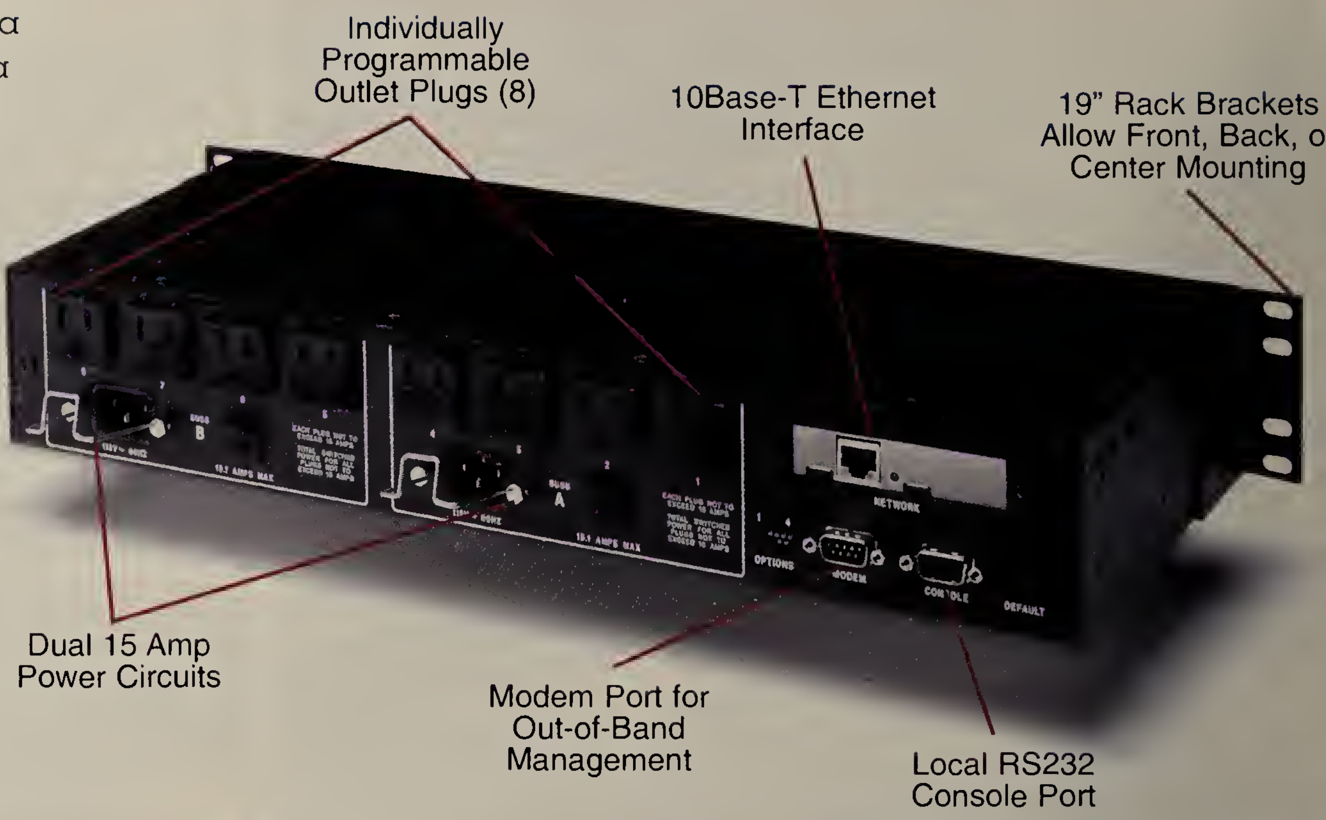
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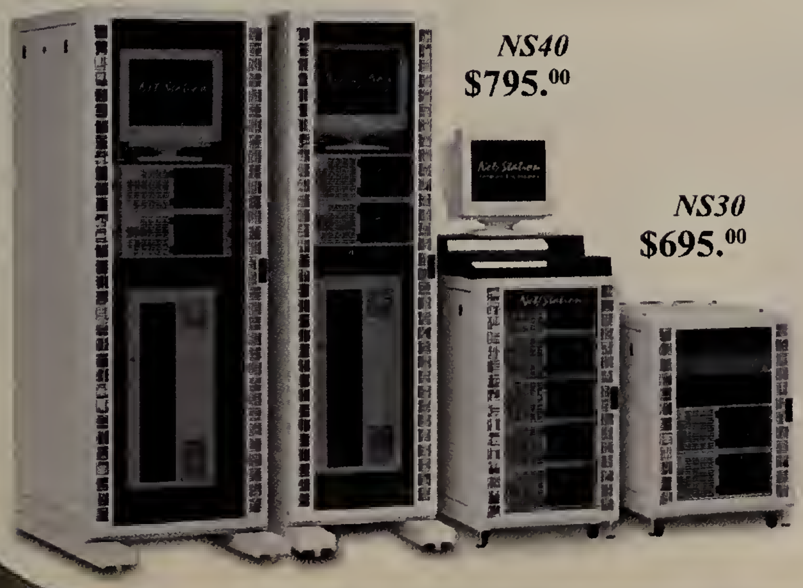

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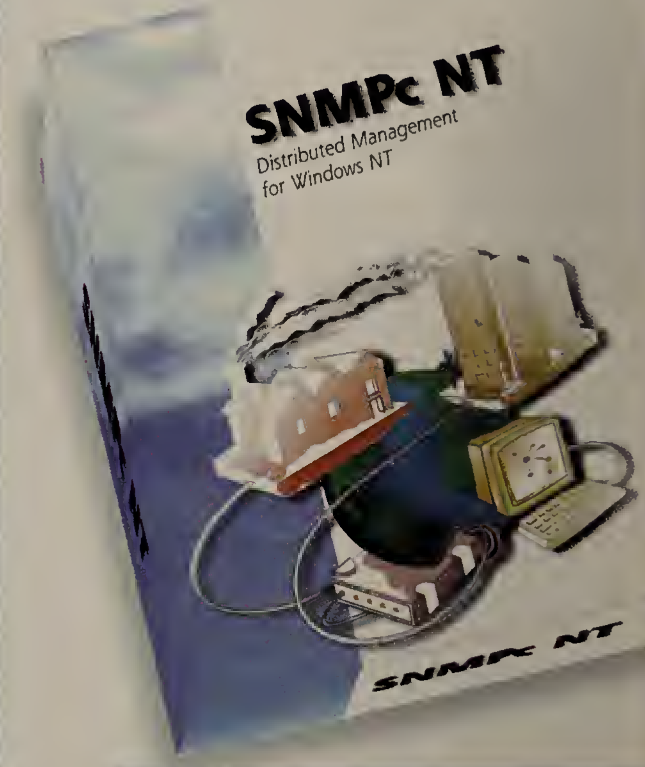

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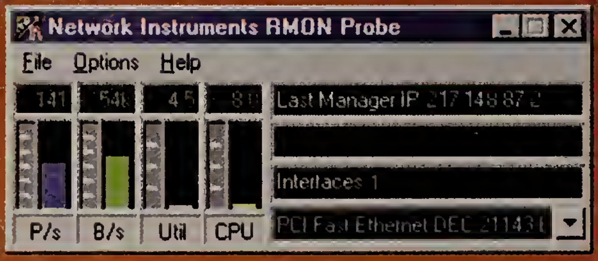

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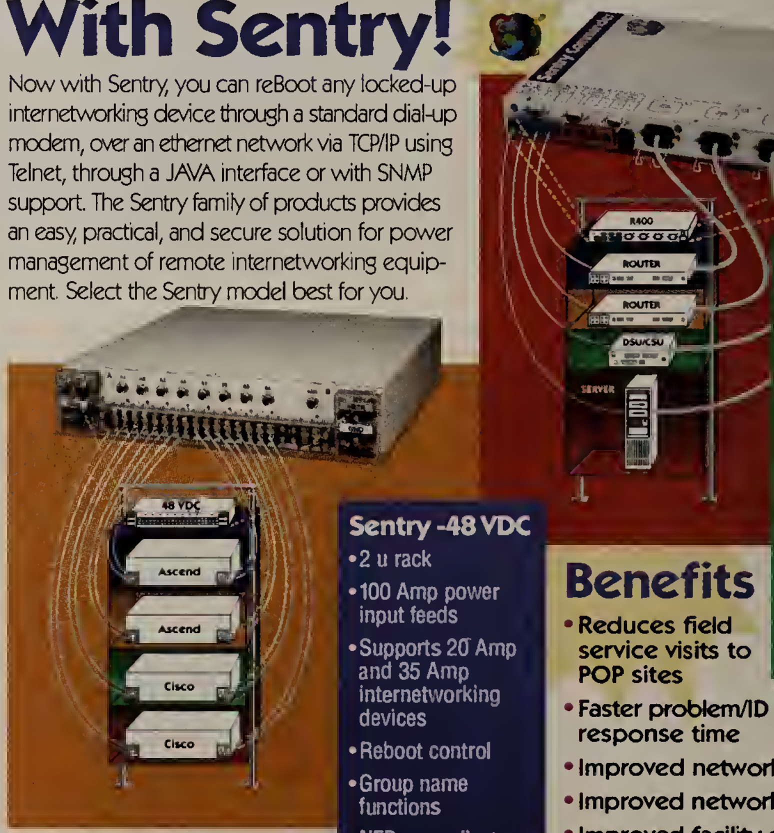

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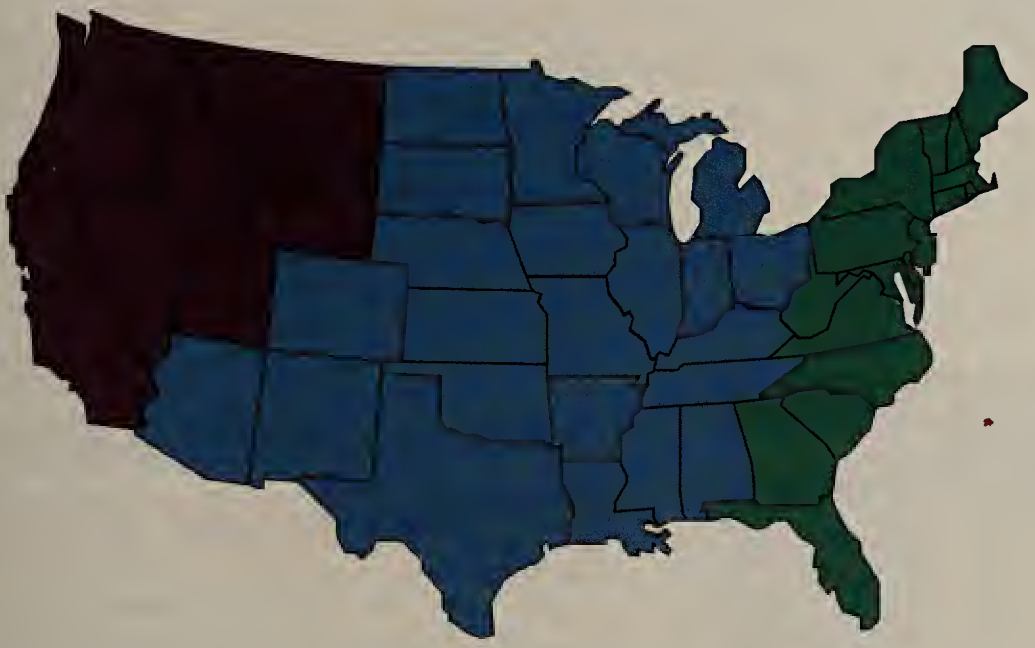

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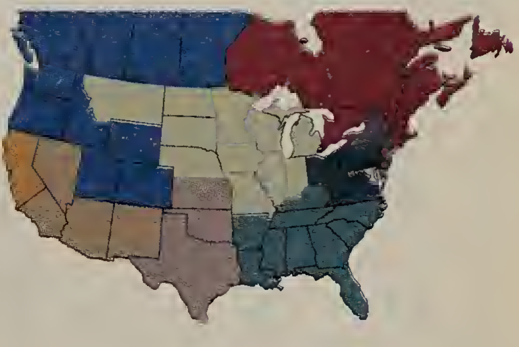

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Y2K

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"A lot of people say this is the place to be on New Year's Eve," agrees Deanna Baker, director of the Y2K project within the IT department at United Airlines in Chicago. "Our people want New Year's to hurry up and get here. We're ready."

The atmosphere at most corporate Y2K command centers will be businesslike rather than jovial. Most companies have forbidden employees from bringing spouses or children to the office over that weekend. In dress and demeanor, employees are expected to behave as if New Year's Eve were just another workday.

Most companies will have Y2K teams working around the clock from Friday morning, Dec. 31, through Monday, Jan. 3, with shifts lasting eight to 12 hours. Anywhere from 10% to 25% of IT workers will be working that weekend, including Y2K programmers and experts on critical systems and business applications. Additional employees will spend the weekend on call, in case systems fail and extra help is needed.

"Everybody in our IT department is on call," says Joe Massani, director for IT at Boise Cascade Office Products in Itasca, Ill. Massani's department has 300 people, and 55 will be on duty New Year's Eve. The rest will work at various points over the weekend.

"We had three or four naysayers who were worried about the heat going off or the lights going out [at home]. They were concerned for their families and kids," Massani says. But the only employees he spared from working over the weekend were those who had trips planned before Y2K work shifts were announced more than a year ago.

Despite the hardship for employees who can't spend the historic weekend with their families, most companies are not offering extra pay except to a few hourly workers. Instead, most companies are granting comp days during December, while a few plan to award bonuses in January if the date change is successfully processed.

"We're a 24-7 operation," United's Baker says. "We're not really treating this weekend different than any other time."

Indeed, working late nights and over the weekend is standard practice for network managers, who regularly deal with work-related disruptions in their personal lives.

"Whenever we do a merger, everyone lives in the command center for a week and sleeps for a few hours a day," says Rich Alden, vice president and Y2K program manager at First Union Bank in Charlotte, N.C. "This is just part of the job."

Virginia Power's Lyn McDermid has more New Year's Eve volunteers than she needs.

While most Y2K command centers will be decorated with balloons, streamers and other New Year's Eve paraphernalia, employees are expected to buckle down and concentrate on the task at hand.

"There will be times over the weekend where the mood can be cheery, but come [Greenwich Mean Time] and at midnight local time, it's going to be serious," United's Baker says. "Everyone will be patiently watching their systems."

Y2K teams also will be monitoring news on the Internet and television throughout Friday, as the time change occurs first in New Zealand, then in Asia, Eastern Europe and finally in London.

"People are going to be on alert as it gets closer to the new year," says Bill Robertson, Y2K program director for the information systems division of the American Red Cross in Falls Church, Va. "There's going to be a fair amount of excitement . . . but it's not going to be a party atmosphere."

First Union Bank considered having a party in one of its main buildings and inviting the families of Y2K workers to join them for the midnight shift. But company officials nixed that idea as too risky.

"We were worried about the safety of the families. If they were here at midnight, then they would all have to drive home," Alden says. "We don't have enough cots for everyone. And we couldn't afford to cater for that big a crowd."

The one area in which companies are splurging is food. While plenty of pizzas and deli trays will be delivered to corporate office parks over the weekend, many companies are catering four-star meals for their Y2K teams. Susan Kurtz, a catering manager at Regency Caterers in Reston, Va., says Northern Virginia firms are opting for "classic elegant foods," including lobster tails, filet mignon, and oyster and shrimp bars.

"A lot of our clients think that if their employees have to work over New Year's, at least they should have food that is festive," Kurtz says. "Since they're not allowed to consume alcohol at work, we've come up with wonderful virgin cocktails and flavored coffee drinks."

Although the most extravagant food will be delivered for dinner on New Year's Eve, caterers will be working overtime to support high-tech workers all weekend long, Kurtz adds.

"We're going to have extraordinarily good food . . . and festive-looking decorations," says Cinda Hallman, senior vice president and Y2K project leader at DuPont, which will have IT staff working New Year's Eve at command centers in Singapore; Geneva; Mexico City; Sao Paolo; Mississauga, Ont.; and Wilmington, Del. "We're going to make it as comfortable as we can so our employees can concentrate on what they're doing."

Most companies are also buying gifts for employees who have to work over that weekend. Among the most popular items are gray and black fleece vests and pullovers embroidered with the company's logo and the number 2000.

"Around Oct. 1, all of a sudden people started buying stuff for the year 2000," says Pam McCord, a marketing representative with corporate gift provider Harper & Co. in Silver Spring, Md. "We had a glass champagne flute with 2000 going down the stem, and we can't get that anymore. There also was a glass coffee mug with 2000 etched in the bottom of it. The orders for that have been phenomenal."

Anticipating victory on New Year's Eve, some companies are already planning celebrations for later in January.

"We hope to have a party afterwards, but we don't want to put the cart before the horse," First Union's Alden says. Still, he adds, "we've got the party budgeted." ◪

WHAT Y2K MANAGERS FEAR

Having fixed and tested their systems, corporate Y2K managers are confident they will successfully process the millennium date change. What they're worried about are the things they can't control: acts of nature, acts of God and the world's fickle financial markets.

"The only thing that I'm really worried about is the weather," says Lyn McDermid, chief information officer of Virginia Power in Richmond. "If we have a major ice storm or snowstorm, it's not that our systems won't work, but that we could have outages blamed on Y2K."

To prepare for that possibility, Virginia Power has hotel rooms booked, all-terrain vehicles on standby and extra cellular telephones ordered. "We have learned over the years that like good Boy Scouts, we need to be prepared," McDermid says.

Weather is also a worry for United Airlines, which has its main data center in Chicago. "We have weather contingencies in place. We have people with laptops at home. We have a facility with bedrooms where our folks can [bunk down]," says Deanna Baker, director of the Y2K project for the IT department at United Airlines.

With 170 chemical plants around the world, DuPont's exposure to potential weather problems is as great as can be.

"Our systems are remediated. The thing that you cannot account for is what's going to happen in the outside world," says Cinda Hallman, senior vice president and Y2K project leader. "My biggest concern is that there will be some major outage of electricity somewhere. Another thing that worries me is the weather. We could have in certain parts of the world a hurricane or earthquake that could cause us problems."

DuPont ran a Y2K test at a plant in Taiwan after the recent earthquake there.

"They had 80% of the electricity go out, and one of our transformers went out [because of the earthquake]," Hallman says. "We were able to test the systems in one of our plants . . . and I'm happy to report that everything worked well."

Officials at First Union Bank in Charlotte, N.C., are less worried about Mother Nature than they are about the bull market. "One of the things we cannot control is the market's behavior," says Vice President Rich Alden, the bank's Y2K manager. "If everyone wants to buy or sell, there would be an impact. We could see a slowdown not because of the Y2K bug, but because of the volume of trades."

First Union is a full-service bank that offers personal brokerage services as well as corporate and municipal trading.

Alden says bank employees are trying to tell customers what to expect over New Year's weekend. Tellers are instructed to inform customers about when deposits made on or near New Year's Eve will be posted, a process that usually takes a few days. The bank's goal is to prevent customers from interpreting normal delays as Y2K problems. "We're trying to educate customers and employees about our normal processes," he says.

— Carolyn Duffy Marsan

Novell pitches 'Net e-mail server

BY DENI CONNOR

Novell's new Internet mail software may be late to the service-provider party, but there is some indication the software may garner interest from a different source: large corporate networks.

The company last week rolled out Novell Internet Messaging System (NIMS), an open standards-based e-mail server and Web browser client. The package is integrated with Novell's eDirectory data repository.

Chip DiComo, network manager for global transportation company Hellmann Worldwide Logistics, says he was looking for a standards-based e-mail product that works with multiple clients. DiComo will use NIMS to create a single address book for Hellmann's customers and some 4,000 users located in its Miami headquarters and in remote offices.

"We saved $6 million of the money we were planning to spend for a Lotus Domino installation, configuration and support by choosing NIMS instead," DiComo says. Hellmann spent $400,000 for its NIMS installation.

NIMS lets users deploy the mail clients of their choice or use a new Novell mail client that works with any Web browser. The package also has a mail proxy function that lets users retrieve messages from proprietary mail systems.

In addition, NIMS provides administrative tools and Web-based management that allows mail administrators to change passwords and set rules for mail forwarding and auto reply, as well as monitor and manage the mail system.

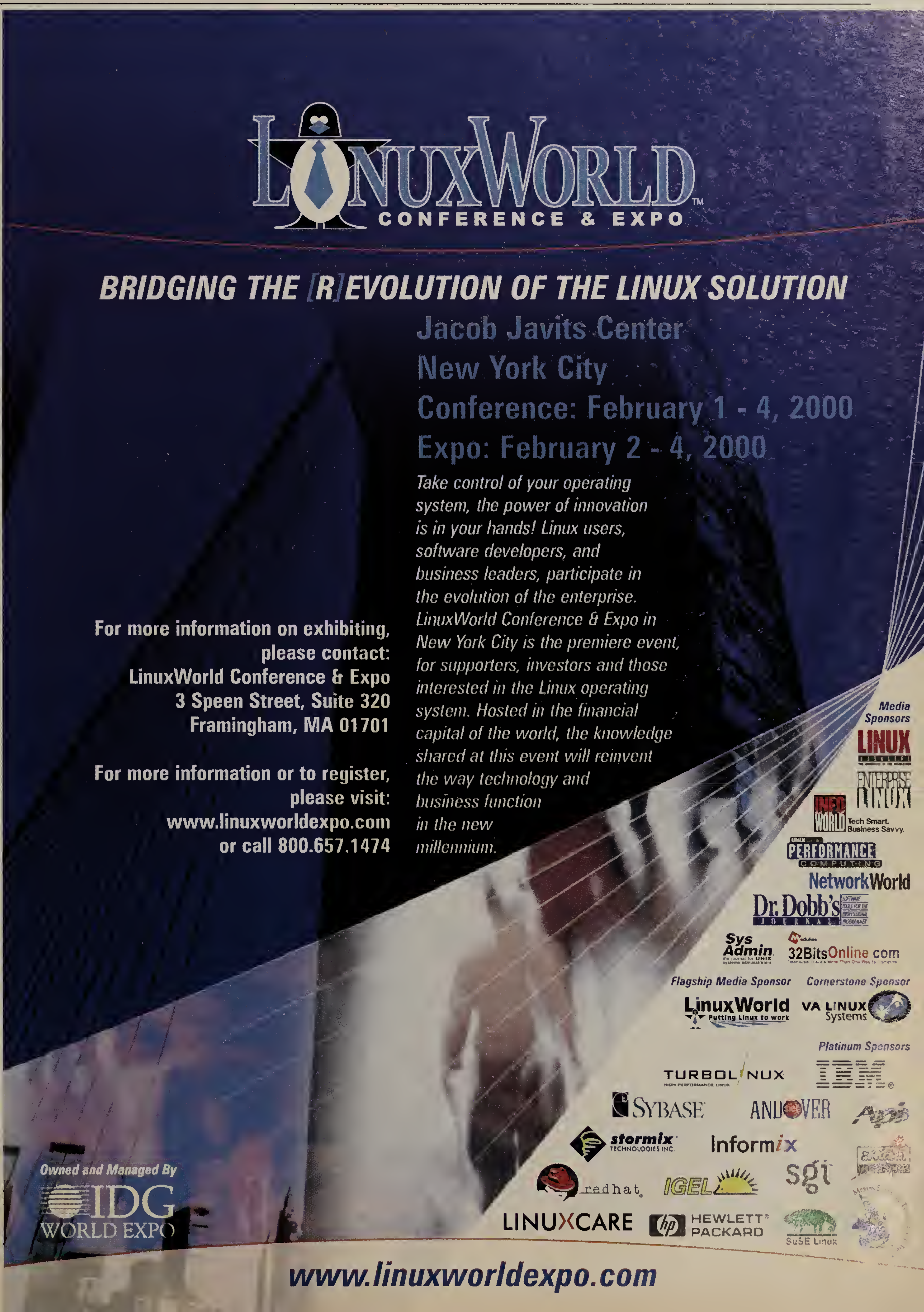
Some industry analysts contend that NIMS will have limited use in corporate networks and will not cause a migration from proprietary mail networks, which offer collaborative tools such as scheduling and task management.

"[NIMS] is unlikely to make a big splash in enterprise networks," says Mark Levitt, an analyst with International Data Corp. in Framingham, Mass. Levitt says that customers using sendmail or another Internet mail system may be enticed to switch to NIMS.

"Netscape had this solution several years ago and found that only limited portions of customers were willing to switch off their proprietary mail systems and go with something else, no matter how good that product was," Levitt says. "That hasn't changed, and it isn't likely to."

James Kobielus, an analyst with The Burton Group in Midvale, Utah, says corporate networks will have a tendency to complement their proprietary mail system with NIMS. It is quite possible those companies will add Internet mail capability for communicating with business partners and customers, as well as remote users. In five years, Kobielus believes there will be parity between Internet mail and e-mail in corporate networks.

Today NIMS is available on NetWare, with support for Windows NT, Solaris and Linux planned later this month. NIMS is available to corporate network customers for $20 per user, although those customers with license agreements with Novell can purchase it at a 30% discount. ◪



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Instant,
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instant messaging, according to industry observers who say interoperability is required if corporations are ever to adopt the technology on a widespread basis.

"Enterprise customers already have e-mail interoperability. As they move toward instant messaging, they're going to ask the obvious question of 'Why doesn't this stuff work together?' " says Mark Day, senior scientist at SightPath and a leader in the instant messaging standardization effort. "If AOL is really not going to give interoperability to most of the companies trying to sell into the corporate space, then there will be additional incentive for these companies to work it out on their own."

Adoption of an instant messaging standard would put an end to skirmishes such as the one last week and allow end users to communicate in real time over the Internet regardless of the type of client software they use.

The Internet Engineering Task Force (IETF) formed a working group in February to develop such a standard, known as the Instant Messaging and Presence Protocol (IMPP). IMPP would allow end users of compliant software packages to see when people on their "buddy lists" are online and chat with them instantaneously. The IMPP working group is almost done defining the protocol requirements and plans to have a draft written by the middle of next year.

"The IMPP work was already very important," says Keith Moore, co-director of the IETF's applications area, which oversees the IMPP working group. "The recent AOL action might reinforce public perception that a standard is needed, but I think the public already realized this."

The visibility of the AOL-AT&T WorldNet flap may push customers to request instant messaging standards, says Patrik Falstrom, the other director of the IETF's applications area. "The fact that a specification exists might make it possible for various players — ISPs, for example — to set up their own servers for instant messaging and point to the spec," he says. "So the pure existence of a spec might mean that the market asks for this instead of proprietary protocols."

The latest flap over instant messaging interoperability began last Wednesday, when AT&T WorldNet released a new version of its I M Here service. Powered by Tribal Voice's PowWow technology, AT&T WorldNet's I M Here supports real-time communications with users of AOL Instant Messenger and Microsoft MSN Messenger. A few hours after Version 3.9 of I M Here was released, AOL began blocking the instant messaging traffic from AT&T WorldNet users. Tribal Voice responded Thursday evening with a work-around that reinstated communications with AOL Instant Messenger.

Instant messaging players

Here's a list of the main instant messaging products on the market today. Each product has its own proprietary technology:

- AOL Instant Messenger
- Microsoft MSN Messenger
- Lotus Sametime
- Tribal Voice PowWow
- Activerse Ding

AOL made the next move at about 1 a.m. Friday when it again began blocking AT&T WorldNet traffic. Whereas AOL had earlier prevented I M Here users from even registering with the AOL Instant Messenger server, this time those users were allowed to register but were prevented from receiving "buddy list" information. That move meant that AT&T WorldNet users were unable to see who was online at any given time, an essential feature of such products.

With more than 37 million users, AOL Instant Messenger is the most popular software used for instant messaging. AT&T WorldNet's I M Here serves 1.8 million users.

An AOL reversal?

AOL's decision to block instant messaging traffic from I M Here seems to be a reversal of the ISP's earlier statements on interoperability. In July, AOL began blocking communications from Microsoft MSN Messenger. After much criticism from the Internet community, AOL announced that it would work closely with the IETF to develop an instant messaging standard. AOL also created an advisory committee on instant messaging standards that includes top executives of Novell, RealNetworks and Apple.

An AOL spokeswoman did not return calls for this story.

"It just amazes me that AOL can be so intransigent," says David Strom, a Port Washington, N.Y.-based industry analyst. "AOL Instant Messenger is the industry standard. It's used by millions of people. . . . It would be in their best interest to see that everyone else adopts their instant messaging standards. All they're doing by blocking traffic is encouraging people to have their own instant messaging clients."

Tribal Voice officials say they have tried repeatedly to get AOL's cooperation on interoperability with their instant messaging software.

"We used the protocols and source code that were published on AOL's Web site," says Beth Nagengast, instant messaging product manager at Tribal Voice. "We looked at the documentation on the Web site, and we believe we are in full compliance. We tried to contact AOL [about our product plans], but they did not return any of our phone calls or e-mails."

Nagengast says AOL officials have not returned calls from Tribal Voice about why they are blocking I M Here.

"We're surprised that AOL is blocking a company that is using their standard," she says.

Some observers say AOL's actions are less about standards than they are about business models.

"It's kind of a textbook case that when you are . . . the leader in a field, standardization is not necessarily good," SightPath's Day says. "You don't want to be seen as blocking it, but you don't want to go out of your way to aid it, either."

The latest version of AT&T WorldNet's I M Here software is available at www.att-imhere.com. ◪

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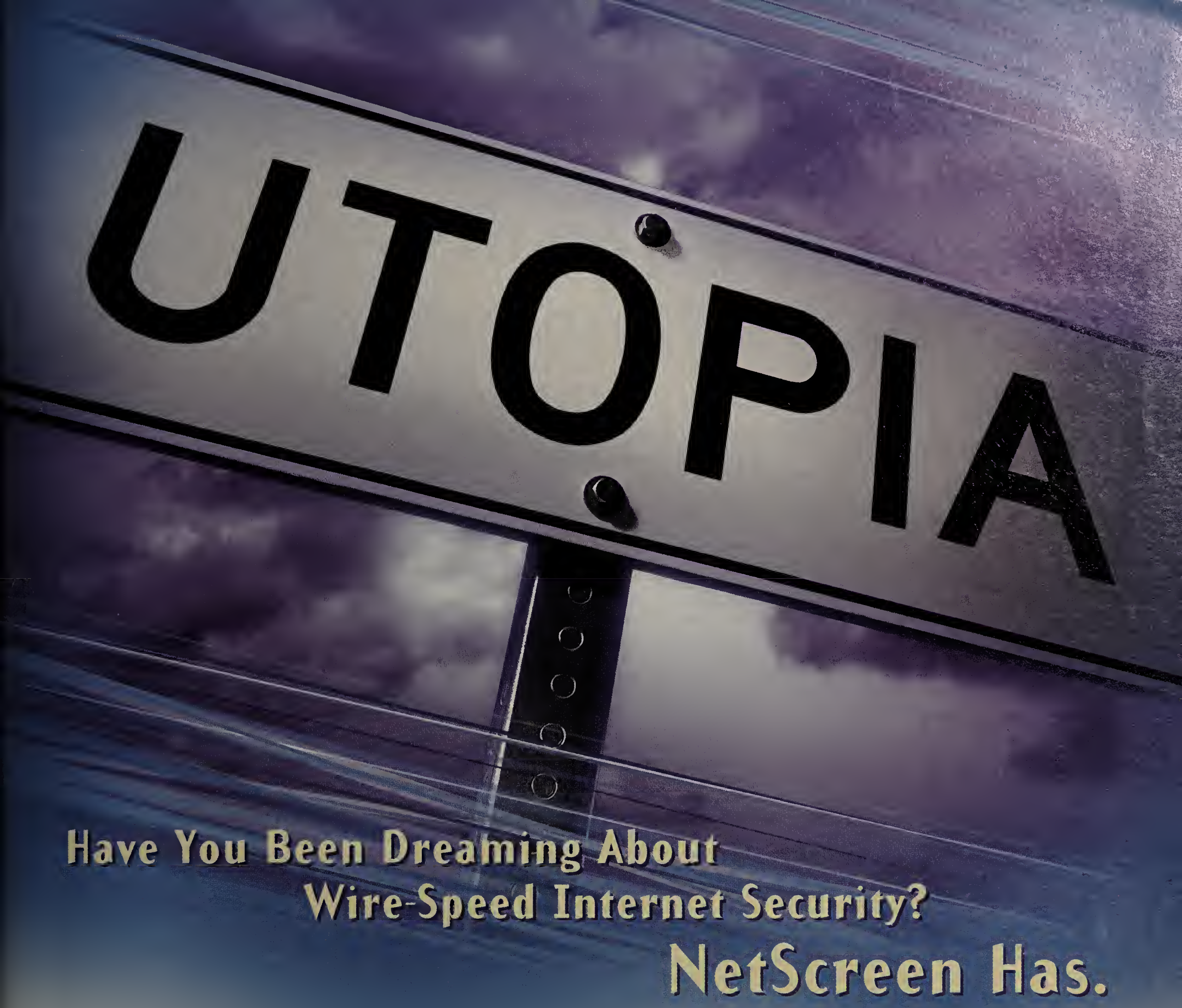

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Backspin

Taking off the training wheels

So, here I am sitting on a plane in Las Vegas at 11:15 p.m., typing away on my Sony Vaio C1.

This machine is currently my ideal PC for traveling. It doesn't take up my entire briefcase, has good battery life, is reasonably lightweight and has an unusual screen size (1,024 by 480), which makes it a lot less likely that the guy in front of me will recline his seat and crush my PC.

Despite my enthusiasm for the C1, I find myself a lot less enthusiastic about its operating system, Windows 98. In fact, the only thing that stops me from loading a serious operating system (Linux or BeOS) is that I wouldn't be able to use the built-in video camera. (Warning: If you're ever in a meeting with me, I may be discretely taking snapshots of you.)

MARK GIBBS

I could bitch about Windows 98 for its performance (poor), architecture (compromised by weak design), or stability (nonexistent), but I have something I hate even more: its version of the office metaphor for the user interface.

The idea of a graphical user interface (GUI) has a long history, reaching back to research at Xerox's Palo Alto Research Center (PARC) in the '60s. But the blame for bringing metaphors to the masses can be fairly laid at the feet of Apple.

With the introduction of the original Macintosh, Apple showed us that a user interface could be simplified by basing its appearance and behavior on the operations of an office. Thus it was that we started talking about folders and desktops and trash bins.

While this was fine and dandy, when Microsoft jumped on the office metaphor bandwagon the fate of the user was sealed to forever work in an office metaphor.

It was arguably in the early '90s that the rot had set in — the clear vision of the office metaphor for the Mac was sullied by user interface "junk" that compromised the clarity of function. In other words, the interface got complicated.

And Microsoft, bless its little heart, ran headlong down the same path. Windows 95 and 98 have so many additions and augmentations that the GUI metaphor could be better described as "Office" by Hieronymous Bosch, the Dutch painter known for his wacko visions of Hell.

In the Windows outer circle of damnation, we have users who are thoroughly confused and support engineers who wind up with the Herculean task of trying to explain the numerous inconsistencies to users who have been told about, and believe in, the advertised idea of Windows being easy to use.

I say it is time to drop the pretence that a modern operating system environment is in any way a parallel to the real world. We long ago passed the point where the actions of a PC operating system and its applications are analogous to everyday experience. It is like trying to explain a Harrier Jump Jet by talking about jumping off a diving board (sorry, that metaphor just slipped out).

Let us not pretend that PCs are or even should be easy to use. Let us instead proclaim that mastering the interface (whatever we're using) takes lots of practice and patience. Furthermore, unless you, Mr. User, get off your fat butt and put some effort into it, you will pay the price — reduced productivity, huge support bills and endless frustration.

No more "ease of use" nonsense. Operating systems are serious tools. Ask the users if they would risk chopping off their fingers simply because they were too lazy to understand how their table saws work.

Time for users to take off the training wheels and learn to ride for real. Now, there's a good metaphor. . . .

Interface your metaphor at nwcolumn@gibbs.com.

'NET BUZZ

The latest on the Internet/intranet industry

PAUL MCNAMARA

You can be certain that Toysrus.com won't be the only online retailer making Santa's lump-of-coal list this holiday season.

According to a "vulnerability index" report from **Comdisco,** only one of seven companies doing business on the Internet has an effective disaster-recovery plan protecting their operations. The other six risk the type of indignity endured by that big-time toy seller, which two weeks ago experienced a Web site meltdown so severe that shoppers could have saved time by walking to the nearest mall.

"Nobody is scaling to the volumes" that their sites are capable of generating, says **John Jackson,** president of continuity services at Comdisco. Jackson's company turns a buck by providing IT organizations with backup systems for handling disasters — be they natural or demand-driven — so it comes as no surprise that he preaches the need for such redundancies.

What's surprising is that so few e-commerce operations have gotten religion on this stuff.

"A lot of retailers are just crossing their fingers and hoping that their servers hang in there for another few weeks," Jackson says.

Such recklessness will not please Mr. Claus.

Top-notch continuity services are not cheap — perhaps 8% of a 'Net operation's budget — but neither is being out of business at Christmas.

Those astronomical initial public offerings of Internet stocks look impressive enough when taken one gold rush at a time. Sweep 11 of them into a glimmering pile, though, and you get an even more remarkable picture of the financial weight being applied to e-commerce.

Accel Partners is just one of a number of A-list venture capital firms turning investor millions into billions these days. Eleven Accel-backed companies went public this year and created a combined market capitalization of $40 billion, according to the firm. Accel's $56 million stake in those companies — which include **Agile Software, Foundry Networks** and **Northpoint Communications** — is now worth a sweet $5 billion.

In addition to making a lot of folks filthy rich, these phenomenal market caps give fledgling companies the rocket power they need to attain "escape velocity," says **Jim Breyer,** managing partner at Accel. . . . Escape velocity?

"Internet companies that execute intensely along many fronts are able to distance themselves from the competition or prevent competition altogether," Breyer explains.

Speaking of escape velocity, how about that Mars Polar Lander? Somewhat lost in all the hand-wringing and head-scratching from **NASA** over what might have happened on Mars was the fact that three companies — **Cable & Wireless, F5 Networks** and **Network Appliance** — were deprived of their moment in the sun by whatever befell the spacecraft. The trio had teamed with NASA to build and hype a high-powered Web site — www.marspolarlander.org — that was backed by the latest in distribution and caching technology. The operation was all set to field an anticipated 250 million hits from visitors looking to view real-time images from Mars . . . images the spacecraft never delivered. (Even so, the site reported almost 90 million hits Dec. 3.)

Two points here:

- Never underestimate those Martian air-defense systems.
- And maybe NASA can sell all that Internet gear to Toyrus.com.

My wife and I recently moved to **Worcester,** Mass., the city where that horrific warehouse fire claimed the lives of six firefighters Dec. 3. The anguish of those left grieving has been simply indescribable.

The *Worcester Telegram & Gazette* has established a fund to help the families of those who died. Donations may be made through that newspaper's Web site, www.telegram.com, or mailed to the Firefighters Fund, c/o Flagship Bank, 120 Front St., Worcester, Mass., 01608.

'Tis the season for giving, so please send your Internet news tips and gossip items to buzz@nww.com.

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